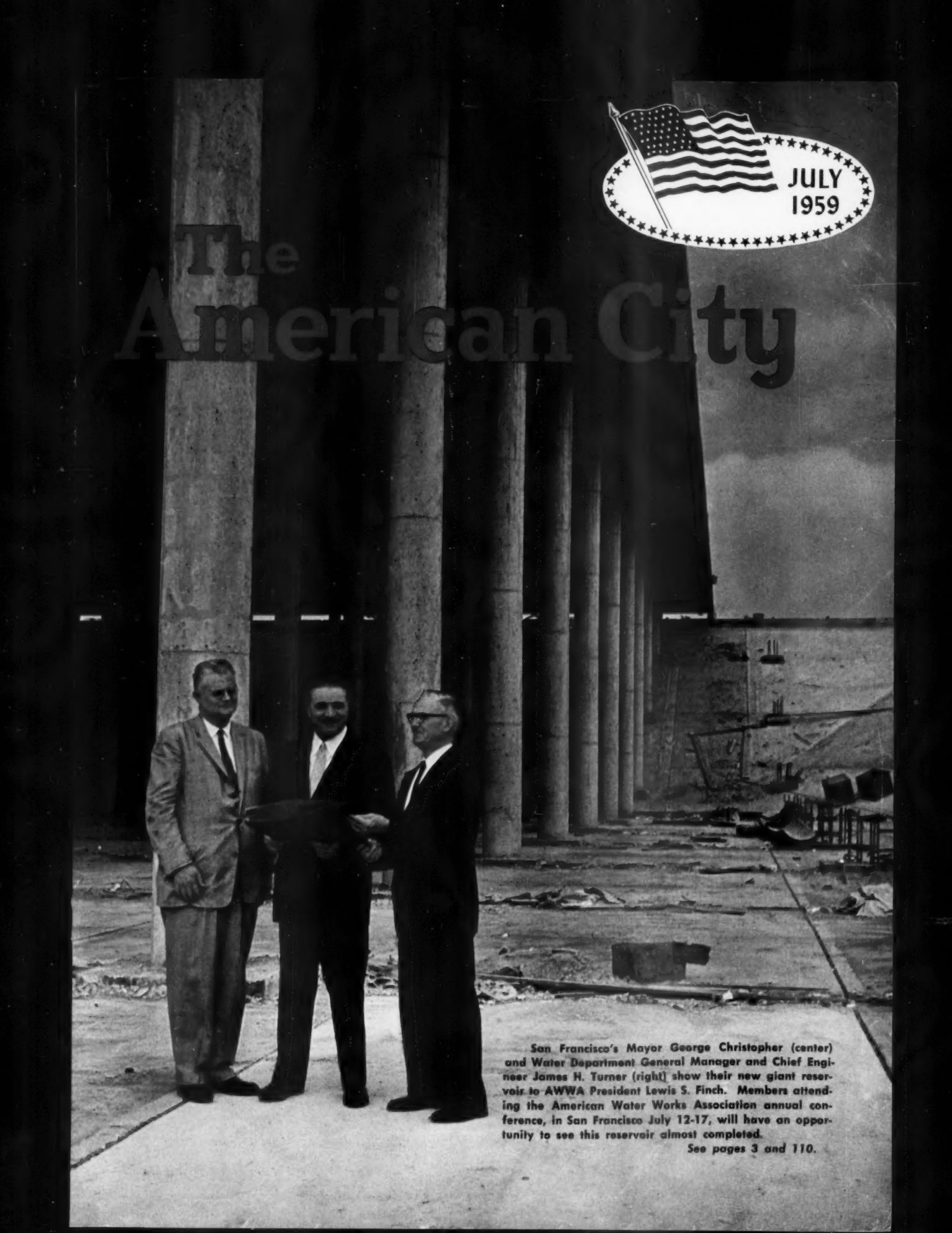

JULY
1959

The American City

San Francisco's Mayor George Christopher (center) and Water Department General Manager and Chief Engineer James H. Turner (right) show their new giant reservoir to AWWA President Lewis S. Finch. Members attending the American Water Works Association annual conference, in San Francisco July 12-17, will have an opportunity to see this reservoir almost completed.

See pages 3 and 110.

The

J

Atlantic City's

PACIFIC AVENUE

– one of the famous resort's many Texaco Asphalt streets

The Texaco Asphalt pavement on Pacific Avenue was laid by A. E. Stone, Inc., Pleasantville, N. J.

Looking up Pacific Avenue during construction of new Texaco Asphaltic Concrete pavement. The Boardwalk and ocean are one block away.

Atlantic City, N. J., the "World's Playground", is famous for its magnificent boardwalk skirting the ocean and for its sumptuous hotels and motels.

Not so widely publicized is Atlantic City's system of modern, well-paved streets. A great many of these thoroughfares, like Pacific Avenue, shown in the photographs, are served by resilient, heavy-duty Texaco Asphalt paving of the plant-mixed type.

Atlantic City is another of the more than 1,500 representative American cities, under whose traffic Texaco-paved streets have demonstrated their durability, low upkeep cost and velvet-smooth riding quality.

Helpful information for the city official on the various heavy-duty, intermediate and low-cost types of Asphalt construction for streets, airports and parking areas is supplied in two free brochures. Our nearest office will be glad to send you copies with no obligation.

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Boston 16 Chicago 4 Denver 1 Houston 1 Jacksonville 1 Minneapolis 3 Philadelphia 2 Richmond 11

TEXACO REG. T. M.

TEXACO ASPHALT

The American City

JULY 1959

A BUTTENHEIM PUBLICATION

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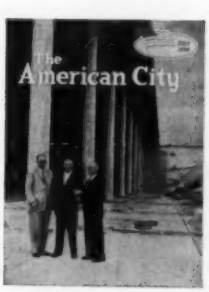

COVER PICTURE

This month several thousand officials and engineers will converge upon San Francisco to renew acquaintances and gain further insight on the complex problems of providing pure water to the nation. Storage is one of these problems, and while in San Francisco they will have an opportunity to see the latest addition to the city's distribution storage system, here being inspected by Lewis S. Finch, President, AWWA, and Vice President and Chief Engineer of the Indianapolis Water Company; the Honorable George Christopher, Mayor of San Francisco; and James H. Turner, General Manager and Chief Engineer of the San Francisco Water Department. For reservoir story, see Page 110.

Is your city profiting from these modern outdoor telephones?

Left: Airlight Booth

Below: Drive-Up Phone

Lower Right: Walk-Up Phone

MODERN OUTDOOR TELEPHONES PROVIDE SERVICE TO YOUR CITIZENS, REVENUE TO YOUR CITY

Outdoor phones on city sidewalks, parks and other public property are more than a convenience. Ready for use night and day, they supplement Police and Fire Alarm Systems—provide a sense of security for local residents and travelers alike. And rather than adding to tax burdens, this service returns substantial and continuing revenue to your city.

Each year, the value of outdoor telephone service for both routine and emergency calls has been growing more evident. Many cities already have well-planned programs to install outdoor phones on public property.

To make these programs more effective, new equipment has been developed. It includes the modern Airlight Booth, the new Walk-Up Phone, and the handy Drive-Up Phone for motorists. Good planning and placement make these public phones as convenient as the corner mailbox.

Your local Bell Telephone company will be glad to custom design a plan for your city and discuss it with you. Call your Bell Telephone manager.

BELL TELEPHONE SYSTEM

VOLUME 74 NUMBER 7

The American City

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Editorial and Executive Offices:

470 FOURTH AVE., NEW YORK 16, N. Y.
MURRAY HILL 5-9250
EDGAR J. BUTTENHEIM
Chairman of the Board
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ASSOCIATED PUBLICATIONS

Contractors and Engineers	MART	The School Executive
Municipal Index	EDUCATIONAL BUSINESS	AMERICAN SCHOOL AND UNIVERSITY

LETTERS TO THE EDITOR

American City Reporting

THE AMERICAN CITY does a whale of a job of reporting what is going on in American cities. One might say it does a better job than the cities, many of which these days are no slouches.

DAN STEIBLE
Exec. Asst. to the City Manager
Cincinnati, Ohio

More Stories On City Buildings

It is refreshing to see your magazine publish the story about the Municipal Building of St. Petersburg Beach, Fla. (THE AMERICAN CITY, June 1959, page 109). The photos indicate a straightforward approach both in its division of functions and external design. It would have been very helpful if space had been allowed to show the plan and the relationship of the building to its surroundings. From the description it appears that the placing of the building with a view to Boca Ciega Bay is most exciting.

I will look forward to more presentations of this type in your publication. It will encourage other municipalities to improve their surroundings.

LOUIS G. REDSTONE
Architect
Detroit, Mich.

Sound Level Meters In Cincinnati

Recently the City of Cincinnati adopted an ordinance concerning the maximum allowable noise levels within the city limits. They are to be commended for this action since noise is an ever increasing problem in the American city. However, I should like to call attention to a serious flaw in the ordinance; it specified by model number and manufacturer a sound level meter which must be used to enforce this ordinance.

So specific a requirement works to the city's disadvantage in two ways. First, it precludes the use of improved or superior meters as they may become available, without modification of the basic ordinance. Secondly, it does not permit competitive bidding on the instruments the city will purchase. At the present time there are at least four competitive sound level meters which will meet the American Standards Association specifications and will give essentially the same results in the measurement of traffic noise. I am sure the people of Cincinnati specified a particular meter to minimize legal wrangling over differences of one decibel or so. But I should like to point out that there is just as likely to be a discrepancy of one decibel or so between two presumably identical meters of the same make and model as between two competitive meters both meeting the American Standards Association specifications.

We are *heartily* in favor of tightening the ordinances regarding measurment of sound levels to the extent of specifying that sound level meters used must meet the full requirements of the American Standards Association Specification Z24.3-1944 or as amended. Any more specific requirement than this works to the city's disadvantage.

E. G. DYETT, JR.
H. H. Scott, Inc.
111 *Powder Mill Road*
Maynard, Mass.

Asks For Better Litter Baskets

I enjoy reading your magazine, telling of the progress U. S. cities are making against slum and sanitation problems.

It seems to me that most all cities could do with better public education on littering. I believe that litter receptacles should be more colorful than they usually are with perhaps modern designs and attractive colors used to make them conspicuous. There should also be "drive-up" trash receptacles placed at the most practical locations.

BILL SHARP
Longview, Wash.

Our Readership Response Appreciated

We owe to you a particular bit of thanks for the gratifying response we have received from city officials throughout the country to your review of our book, "Zoning for Minimum Lot Area."

You and your staff are to be congratulated for the production of your fine magazine.

D. BARRY GIBBONS
Assistant Director
Communities Research Institute
Villanova University
Villanova, Pa.

No. 955 excavates part of a total of 19,000 yd., preparing for base an area 20 ft. wide, 12-13 in. deep. Cuts are made by Cat No. 12 Motor Grader and windrowed. Job is part of a $1,828,366 project by Gulf Bitulithic Co. on U. S. 75, to be part of the Interstate Highway System.

Says Operator F. H. Leggett: "I can move over 100 cu. yd. a day more with the side dump than with other loaders. It doesn't spill dirt because you don't have to jockey for position. A Traxcavator is easy to operate and I'm less tired at night. It's the best on the market."

Weather bad... No. 955 terrific... job on schedule!

The performance and versatility of a Caterpillar No. 955 Traxcavator with Side Dump Bucket was vividly demonstrated on a recent highway project in Texas. What happened is of importance to every municipal and county official concerned with the purchase of equipment.

Bad weather cut work days to 20 per cent during the first six months on a 2½-mile widening job on U.S. 75 at Conroe, Texas. A drag line proved a poor producer in the shallow cut. Switching to a Cat No. 955 Traxcavator with Side Dump Bucket, Gulf Bitulithic Co., Houston, Texas, got the job back on schedule—and kept it there! Five-yd. trucks were loaded in an average time of three minutes; four buckets to the truck.

"We increased production 25 per cent," says Superintendent Thomas "Red" Brown. "I like that Side Dump Bucket. You can't beat it."

In-line loading of trucks with the Side Dump Bucket paid off in less traffic congestion on the busy highway, and it also avoided tearing up the subgrade with twisting and turning.

Side Dump Buckets are available on all three Traxcavators: No. 977 (2¼ cu. yd.), No. 955 (1⅝ cu. yd.), and No. 933 (1⅛ cu. yd.). Other buckets, teeth, 'dozers and forks help make a Traxcavator the most versatile excavator-loader.

More and more municipalities and counties are finding the performance and versatility of Cat-built Traxcavators can save taxpayers' money. Ask your Caterpillar Dealer today to demonstrate on your operation. And remember, his reliable parts and service facilities stand behind your investment.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

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YOUR TAXPAYERS GET THEIR MONEY'S WORTH WITH CAT-BUILT MACHINES

EDITORIAL

Waterworks Men— Good "Doers", Poor "Sellers"

The trouble with most waterworks men, one knowledgeable municipal administrator said recently, is that they are often better "doers" than they are "sellers." This probably puts a finger on the trouble that the water works industry is in today, and that will stimulate a good share of thoughtful discussion among leaders of the American Water Works Association during the annual meeting being held this month in San Francisco.

Certainly one must praise the skill and thought embodied in the engineering side of water supply and purification. Waterworks men can build pumping stations that start automatically, that can adjust to changing water demand conditions, and even telephone back operating results without anyone near the station.

These men can build purification facilities that apply treatment as delicately as seasoning on a salad, or are powerful enough to bulldoze out strong, offensive polluting matter.

This is part of the "do" side of the waterworks man. He does his work well. There is no shortage of engineering know-how in the water works field.

Unfortunately there is often a shortage in the management and public relations side. Good management and good public relations are the very essence of good business.

A waterworks superintendent is part of the city's administrative team. In that capacity, he must be prepared to present information to his city council that will help the members establish sound municipal water works policy. But he must do more than just present the proposal. He should be ready to follow through, to help sell it. If a proposal fails, he should ask himself to what degree did he contribute to its defeat.

Little things make big differences in the eyes of the public, who in the last analysis are owners. Too many water works send well-trained crews out looking like members of third-rate construction gangs. In too many cases, meter readers look like refugees from "skid row." Not enough waterworks men do simple little things such as arranging for escorted water supply tours for science classes in the high schools. These youngsters not only carry home a lot of information to their parents, they also grow up and become voters.

Not enough water departments make constructive use of the water bill—one of the few direct links that it has with the people it serves. This bill gives the water department the opportunity, for example, to tell the customer what *his* department is doing to extend and improve service. One also might put in some customer-winning leaflets such as tips on how to care for lawns, trees and shrubbery, supplied by the park department. AWWA's little public relations cartoon character "Willing Water" ought to find its way into water bills in some way or another. This kind of communication is practiced by many progressive business concerns.

Waterworks men like to feel that theirs is an engineering function. Engineering has long been defined as the utilization of the forces of nature for the aid and benefit of man. Unfortunately, not enough realize that human nature is one of those forces.

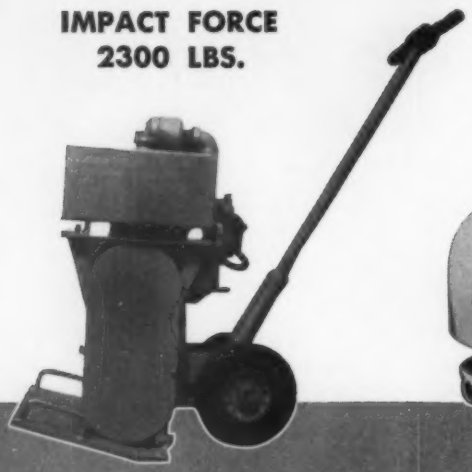
Samuel Baxter, Commissioner of Water, Philadelphia, once said that a waterworks man ought to do more than state his opinion. If he believes in it, he ought to work for it. This is another way of saying that the waterworks fraternity has to get over being just good "doers," and start in learning how to be good "sellers," thereby advancing themselves professionally and economically, and at the same time strengthening their city's vitally-needed water service.

Are You Having Compaction Problems?

BACKFILL SINKING? TRENCHES OPEN TOO LONG?

. . . Eliminate with a Terrapac Vibratory Compactor!

IMPACT FORCE 2300 LBS.



TERRAPAC CM-15

IMPACT FORCE 3-1/3 TONS

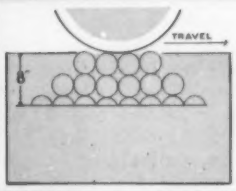
TERRAPAC CM-20

Small, self-propelled, one-man operated, heavy-duty vibratory tampers now enable you to really compact crushed stone, sand, gravel, etc. without bringing in 10-20 ton static rollers. . . . They are also ideal for small asphalt jobs including patch work. . . . The CM-15 will compact lifts up to 12 inches, while the CM-20 penetrates up to 30 inches — in one or two passes. . . . Prove it to yourself — on your own job. . . . To arrange a demonstration, contact your local Vibro-Plus distributor or write to us direct.

Ad 41-80

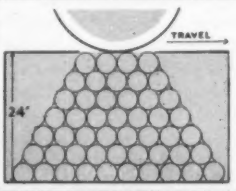
SPECIFICATIONS

	Impact	Frequency VPM	Travel Speed	Weight
CM-15	2300 lbs.	2350	up to 55′ per min.	242 lbs.
CM-20	6600 lbs.	2000	up to 75′ per min.	950 lbs.



CONVENTIONAL STATIC COMPACTION

Static rollers, relying on weight alone, produce friction forces between soil particles causing bridges to form. Terrapacs break bridges for deep compaction.



TERRAPAC DYNAMIC COMPACTION

Vibratory energy breaks frictional forces binding soil particles together, allows soil to sift down producing uniform densities at greater depths.

VIBRO-PLUS TERRAPAC

VIBRO-PLUS PRODUCTS, Inc.

STANHOPE, NEW JERSEY

WORLD'S LEADING MANUFACTURER OF VIBRATORY EQUIPMENT FOR OVER TWO DECADES!

Smooth Cuts In Asphalt

The asphalt cutter successfully provided a smooth ditch edge for 8,500 feet of new sewers in San Bernardino.

When R. E. Mills was city engineer of Ontario, Calif., he often expressed annoyance over the ragged cuts in the asphalt whenever a trench had to be opened in the street. Rather than allow this sloppy practice to continue, spoiling the appearance of an otherwise good job, he developed a tool that produces smooth cuts in the asphalt surfacing. The new tool has been so successful that several other cities, as well as a great many contractors, have used it to reduce costs and produce smooth cuts. The tool, made by Cutaline, 425 North Laurel Ave., in Ontario, can be attached to any medium or heavy motor grader.

Although the earlier model first used in Ontario lacked the durability and other improvements now incorporated in the tool, it was successful both in savings and in the quality of the cut. It provides straight, smooth cuts in asphaltic pavement at a fraction of the cost of sawing or cutting the pavement with air hammers equipped with spade bits.

The Cutaline has limitations. It will not cut concrete, and although the County of Los Angeles was able to make a comparatively shallow but effective cut in 8-inch-thick asphaltic concrete with the tool, it works best on asphalt surfacing 2 to 4 inches thick.

Street Superintendent Hobart Taylor of Ontario used one wheel to cut approximately 30,000 feet of pavement.

Excessive thicknesses may require additional passes.

Mr. Mills is currently a partner in the consulting engineering firm of Associated Engineers, Ontario and San Diego, Calif.

Cost Sharing Program Speeds Sidewalk Repairs

The responsibility for maintaining sidewalks in the Village of La Grange, Ill., rests with the property owner. Nevertheless, the village government is interested enough to help.

To expedite much needed repair work to the walks in this primarily residential community of some 14,000 people, the village adopted a program whereby only 50% of the cost is borne by the property owner and the balance by the village.

The village board of trustees instituted the program last year upon the recommendation of Robert Meyer, village superintendent. As a result, some 16,000 square feet of sidewalk was repaired. The work cost $14.50 per square section of walk (5'x5') toward which the village contributed $7.25. This year's budget includes $5,000 to continue the cost-sharing program.

Property owners are urged to take part in the program through press releases in the local newspapers and may do so by submitting applications at the village offices. The engineering staff inspects the walk, determines what work is required, and advises the property owner as to the approximate cost. The owner may then accept or reject the proposal as he wishes.

A private contractor performs the repair work under a single contract awarded in the spring. Village employees supervise the work. Property owners are advised of the actual cost as soon as the contract has been awarded. Village forces also provide for any incidental work plus all engineering. The property owner contributes 50% of the actual cost of sidewalk work only.

The Town of Babylon, N. Y., has grown from a population of 40,000 in 1940 to more than 115,000 today. Cat Motor Graders have proved mainstays of economical operation building new streets, as well as resurfacing and maintaining existing streets.

"OUR NO. 12 WITH PRECO AUTOMATIC BLADE CONTROL CUTS GRADING TIME IN HALF—AND THAT'S NOT ALL!"

Charles Vogel, Supt. of Highways, Town of Babylon, Lindenhurst, N. Y.

HERE ARE FACTS, straight from Mr. Vogel: "The Preco attachment on our Cat No. 12 Motor Grader cuts grading time in half, saves many man-hours checking and staking grades and enables us to use less experienced operators on fine grading. It paid for itself in one season!

"One example of its value is its work on our Herzel Blvd. The S. E. section is 4,100′ long. We built it 50′ wide with an 8″ crown. Two motor graders without Preco took 5 days to bring it to instrument-checked specifications. It had to be 'shot' every day and 100 markers were needed as guides.

"The N. E. section is 2,300′ long, 50′ wide, 8″ crown. The Preco attachment on the No. 12 enabled us to complete the grading—instrument-checked—in less than a day and held the grade to within ½″. The Preco Automatic Blade Control is a timesaver and a material saver. On another job we saved 51 truckloads of material on one S-curve."

Here are more facts from Frederick Wendell, Construction Foreman: "The No. 12 is a money saver because of its low down time, economical operation and easy maintenance. The Preco attachment is excellent. It combines two jobs for us. It helps survey by determining low spots and fine-finishes the grade quickly and accurately."

With Preco, optional on the No. 12, the operator selects the desired slope on a dial, and the unit automatically maintains blade slope within ⅛″ in 10′. A Caterpillar exclusive, the Preco Control is now transistorized for more freedom from maintenance and adjustment. Nothing can match it for fast, economical grading. Job after job proves this. For complete facts, see your Caterpillar Dealer.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR

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BEST BUY FOR YOUR TAX DOLLARS

Back Hoe Pinch-Hits As a Pipe Pusher

An Evanston contractor, while he was installing 7½ miles of street lighting on Chicago's Southside Marquette Ave., developed a new way of placing buried cable under sidewalks, streets, and parkways.

Instead of tearing up walks and drives, the contractor used an International utility tractor equipped with Pippin backhoe to push a pipe carrier through the ground under the pavement.

The pipe first was capped at the front end to prevent plugging, then headed in the desired direction and pushed through the ground with the bucket o nthe backhoe. With this done, it became an easy matter to thread and cable through the pipe.

In the pinch-hitter role of pipe-pusher, the 45-hp utility tractor has driven, in a single day, as much as 500 feet of pipe under streets and other barriers.

The tractor-mounted backhoe pushes a pipe for buried street lighting cable under a driveway.

States Consider Reimbursement To Utilities for Highway Relocations

Water works and other utilities who are forced to relocate their lines because of Federal-Aid highway construction may get some finanial assistance. So far in 1959, 12 states considered bills to extend such aid.

Iowa, New York, South Dakota, West Virginia, Oregon and Washington legislatures debated bills that would provide payment for utility relocation costs on Interstate System construction. An amendment to the Iowa bill would make it apply only to publicly-owned utilities. The New York and South Dakota bills died in committee. The West Virginia bill failed to pass and the Oregon bill is expected to fail. The Washington bill, however has been passed and enacted.

California, which now reimburses certain utilities for relocation costs, would be further required by a pending bill to pay the relocation costs of publicly-owned water-transmission pipes on state freeways.

Connecticut may broaden its law to authorize payment of an "equitable share" (50%) of the cost of installation of sewer facilities in trunkline highways. An Indiana bill would require the state to pay all costs of relocation of water utility facilities made necessary by Federal-Aid highway construction.

A New Mexico bill would require the state to pay the relocation costs of municipally-owned utilities on both the Interstate and primary systems. Pennsylvania is considering a somewhat similar bill.

A bill enacted by the North Dakota legislature prohibits all utilities, except those in areas platted as town sites, within 102 feet of the center line of any state highway right-of-way.

Color Film Depicts Paving Procedures

A new 16-mm color film taken during paving operations of the John C. Peterson Construction Corporation section of the Illinois Toll Road is now available to engineers, contractors and civic groups. Entitled, "Paving Modern Concrete Highways," the 800-foot-long film shows base laying; form setting; subgrading; cement and aggregate batching; paver, spreader and finisher operation; form stripping; and shoulder widening. Case history reports provide background information.

The number of the film is STF-107. It may be obtained on loan by writing to the Blaw-Knox Company, 300 Sixth Ave., Pittsburgh 22, Pa.

NEW!
EPON® 1001
INSIDE COATING

The most important potable water news in years!

. . . For all piping — metal, concrete, tile
. . . For any water condition
. . . For any practical flow rate *and now* —
. . . Meets existing public health requirements

Among the toughest, most durable resins known to modern chemistry, Shell Epon 1001 is an ideal interior pipeline coating for potable water lines. It has an outstanding record of performance as a chemical-resisting coating for oil pipelines, tank interiors, and as a finish coating for appliances, trucks, and plant equipment exposed to corrosive fumes.

Conventionally cured coatings of Epon 1001 have truly remarkable adhesion, especially to metals, excellent resistance to impact, cavitation, and abrasion. Outstandingly resistant to water erosion, Epon 1001 interior pipe coatings have given years of service, even in difficult water areas, with no perceptible deterioration or contamination of supply.

Epon 1001 may be applied by brush, spray or pig. Setting takes place at room temperature within an hour or so. Curing time may be considerably shortened by the application of heat.

The best news of all is that Epon 1001 pipeline coating can reduce your mainfenance costs, no matter what your potable water condition . . . and often enables you to supply higher purity water.

* * *

Contact your nearest Shell Chemical district office for complete information on this important new development. Your Shell Chemical district representative has all the facts you need to help you get started right away.

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100th Anniversary

HERSEY

100 YEARS OF PROGRESS

In 1859
HERSEY
Started Here

1908-1923
This Large
Plant was
Built and
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HERSEY Mfg. Co.

And in 1957
The Increased
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HERSEY
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necessitated
the Building and
Occupancy of
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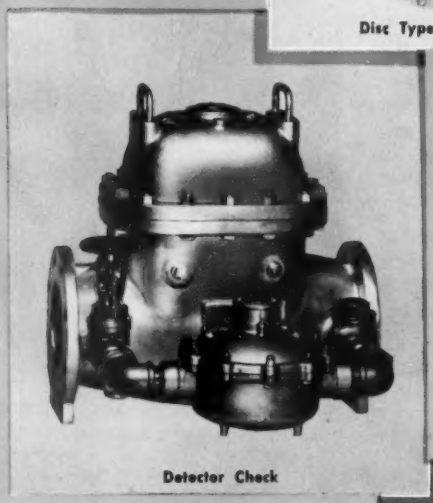
WATER METERS

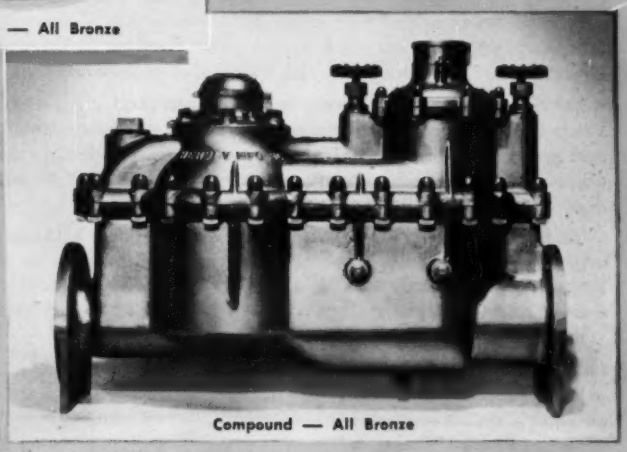
Your Best Buy For All Types of Services

Disc Type — Frost Protected

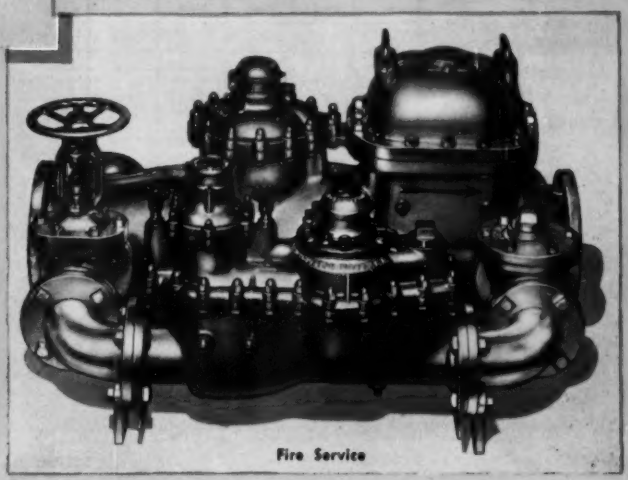
Disc Type — All Bronze



Detector Check



Compound — All Bronze



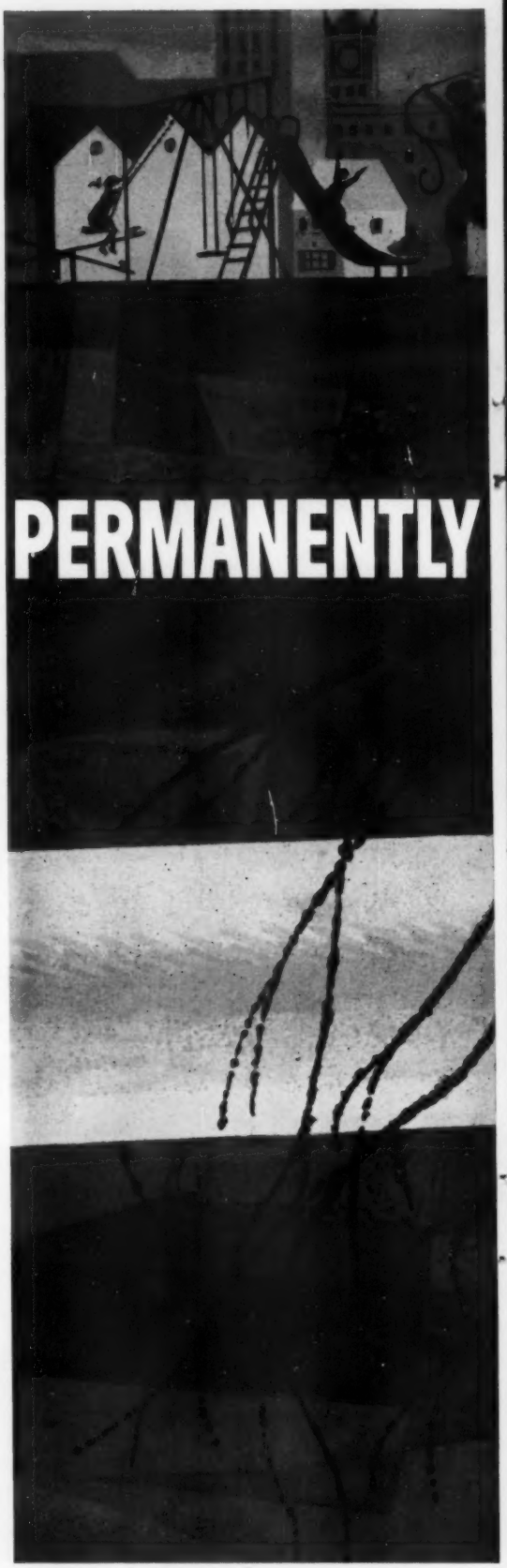
Fire Service

HERSEY MANUFACTURING COMPANY
(Est. 1859)
DEDHAM, MASS.

BRANCH OFFICES:
NEW YORK — PORTLAND, ORE. — CHICAGO
SAN FRANCISCO — LOS ANGELES
PHILADELPHIA — DALLAS
ATLANTA

"You can't buy a better water meter than HERSEY"

K&M ASBESTOS-CEMENT SEWER PIPE



Sewer pipe maintenance headaches disappear when you install "K&M" Asbestos-Cement Sewer Pipe.

Flow-stopping, pipe-clogging roots . . . no matter how cobwebby-thin . . . can't penetrate the exclusive patented "K&M" FLUID-TITE coupling . . . unmatched in its tight sealing. In repeated tests, "K&M" Asbestos-Cement Sewer Pipe successfully resisted infiltration even when external water pressure was 25 psi . . . the equivalent of a 58-foot head and way above field conditions.

Service remains continuous and uninterrupted . . . with fewer inspections and periodic cleanings. You can reduce treatment loads and costs . . . because infiltration is eliminated. Being made of quality asbestos fibers and portland cement, "K&M" Sewer Pipe does not corrode and is immune to electrolysis.

In fact, "K&M" Asbestos-Cement Sewer Pipe is a tax-saver at every stage of construction: planning and installation, as well as maintenance. Transportation and handling is less expensive, because "K&M" Asbestos-Cement Sewer Pipe is light in weight.

In short, practically indestructible materials plus eighty-five years of asbestos engineering give you the finest, most dependable sewer pipe available. That's why we urge you to write today for more information.

5 CRUSHING STRENGTHS OF K & M SEWER PIPE

Size Inches	Class 1500	Class 2400	Class 3300	Class 4000	Class 5000
6	1500	2400	3300		
8	1500	2400	3300		
10	1500	2400	3300	4000	5000
12	1500	2400	3300	4000	5000
14	1500	2400	3300	4000	5000
16	1500	2400	3300	4000	5000

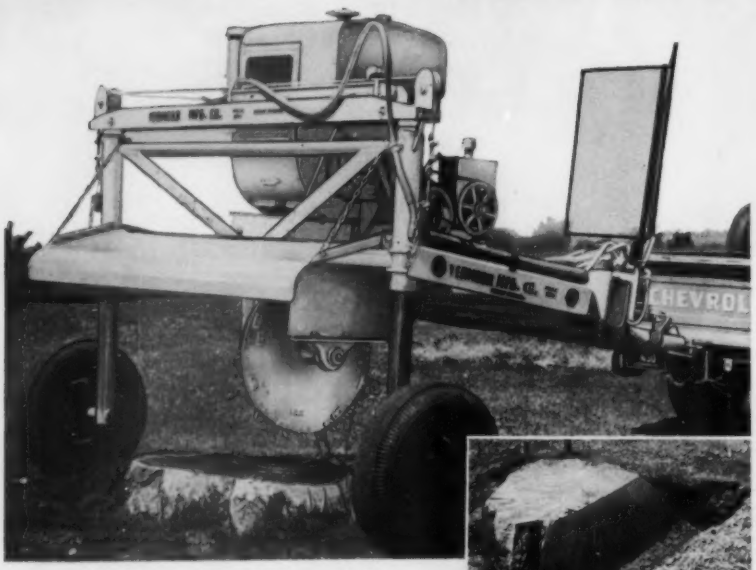
K·M BEST IN ASBESTOS

KEASBEY & MATTISON
Company • Ambler • Pennsylvania

, AUTOMATICALLY ROOT-TIGHT

Exclusive FLUID-TITE Coupling joins lengths of various crushing strengths and sizes. Assemble it in any weather—without the aid of heavy machinery. It's water-tight and root-tight.

RIPS WIDEST STUMPS TO SHREDS . . . IN MINUTES!

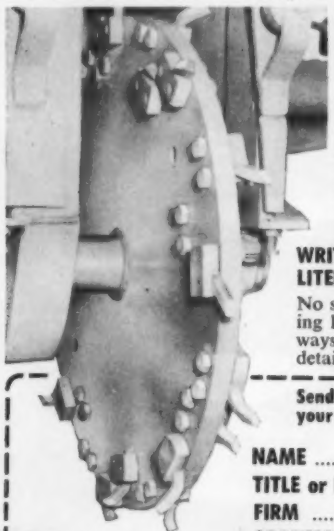


FIRST IN THE FIELD

THE ORIGINAL, VERMEER

POW-R-STUMP CUTTER

You'll never know how easy stump removal can be, unless you've seen the Pow-R Stump Cutter in action. Here's the machine that has simplified this expensive, back-breaking, laborious job in cities, parks, golf courses and cemeteries all over the country. A one-man operation . . . a real time saver . . . a real labor saver! The Pow-R Stump Cutter removes the largest tree stump — rips it to shreds down to a depth of 10" below the ground — all in a matter of minutes. "Removed 44 stumps in 8 hours with the Pow-R-Stump Cutter" . . . is the report from one city recently.



The Leader . . . 10 To 1 Choice Of Tree Experts Everywhere

The Vermeer Pow-R Stump Cutter was FIRST . . . the original stump remover. It's a quality machine, ruggedly built to take on the toughest, largest stumps. Cuts wider stumps (a full 72") and higher stumps (37" above the ground) at one setting! Operator has full view of cutting wheel at all times . . . behind wire mesh safety shield.

WRITE FOR COMPLETE ILLUSTRATED LITERATURE AND LOW PRICES NOW

No stump to be hauled away. No gaping holes to fill. No damage to driveways, curbs or sidewalks. Get all the details by mailing the coupon below.

Send complete descriptive literature and prices on your Pow-R Stump Cutter to:

NAME .....

TITLE or DEPT. .....

FIRM .....

ADDRESS .....

CITY ..... STATE .....

VERMEER MANUFACTURING CO.

1452 W. WASHINGTON • PELLA, IOWA

World's Largest Waterspheroid

The small but growing city of Red Deer, Alberta, Canada owns the world's largest waterspheroid. Built by Horton Steel Works Limited, a subsidiary of Chicago Bridge and Iron Company, the tank stands 122 feet high and has a capacity of 500,000 imperial gallons (600,475 U. S. gallons). Completion of the tank late in 1958 marked the beginning of a $4,000,000, twenty-year distribution expansion program for Red Deer. The city now has a population of about 14,000 persons and ultimately expects to reach 35,000.

Prior to installation of the waterspheroid, the city operated under a "two pressure system" — the low section of the city on one system and the upper part on another. With the new tank, the city operates on a single pressure system controlled entirely by the water level in the tank.

The world's largest waterspheroid in Red Deer, Alberta, Canada is also the first of its design for elevated storage erected in Canada.

Increased Pressure

The tank greatly increases pressure in the business district and provides a ready supply of water for fire fighting. In addition, the base houses water heating facilities and automatic controls which normally would have required construction of another building. A third feature is its aesthetic appearance—of special importance because of its location in a residential district.

Don't just eye it, try it!

The only water meter with a powerful magnetic drive . . . the only meter with a hermetically sealed register . . . the only meter without a stuffing box . . . the only meter with but two parts operating in water.

Revolutionary ***MAGNETIC DRIVE***

ROCKWELL Sealed Register **WATER METERS**

How the powerful pull of a magnetic meter drive benefits you

This simple diagram demonstrates how the driver magnet (shown in hand) revolves around a watertight compartment at the base of the register. This compartment encloses the follower magnet which pushes a crankshaft to transmit every motion of the piston to the sealed reduction gearing.

With this construction there's no stuffing box to leak or bind. The register, kept clean and dry in its hermetically sealed case, is always operative—always fog free and easy to read. And in this revolutionary meter there are *only two moving parts* in water. It's truly the *least vulnerable* meter ever—the easiest, quickest and most economical to repair. For a descriptive bulletin, write Rockwell Manufacturing Company, Pittsburgh 8, Pa.

SEALED REGISTER METERS

another fine product by

ROCKWELL

Proof from over 60 U.S. cities: you can . . .

solve sanitation problems, save money with a city-wide garbage disposer plan

Progressive cities such as Detroit, Denver, Columbus, Ohio and Lodi, Wis. have joined the trend to "garbage-free" communities . . . with taxpayers' hearty approval.

City planners of Lodi, Wis., tired of dumping facility headaches and garbage collection costs, passed an ordinance making garbage disposers mandatory in all homes. In less than two years, this move has brought gratifying results. Not only is the plan ridding the city of disease-bearing garbage, but also it is saving this city of 1600 people over $3000 a year on garbage collection alone.

When this plan was considered by Lodi officials, the leading makes of garbage disposers were tested. Several were approved for the plan, which called for the purchase of disposers by home owners through their plumbing contractors. Satisfaction with In-Sink-Erator disposers, the choice of most home owners, has helped make the plan a success, Lodi's Mayor Fisk reports.

Altogether, over 60 U. S. cities, large and small, are proving the "garbage-free" community plan to be the most effective way to remove health hazards and make life more comfortable for their citizens. These plans are completely debunking all misconceptions about garbage disposers. A recent survey of cities with disposer ordinances highlights these important facts:

1. The use of garbage disposers does not impose a critical load on the city's sewage system. The increase in water usage per average family per day is approximately the amount of water required for one flushing of a water closet.

2. Garbage ground in disposers does not clog sewage systems. Ground garbage is 95% water. The remaining solids are easily water borne.

3. A city-wide disposer plan is practical. Eliminating garbage means a reduction of approximately 50% in collection tonnage. Collection of remaining material can be spaced at greater intervals, greatly reducing collection costs.

4. Ground garbage does not clog septic tanks. If a septic tank handles the normal needs of a family, it will easily handle the small additional load of solids passing through a garbage disposer.

"Satisfaction

. . . with In-Sink-Erator disposer, the choice of most home owners, has helped make the plan a success," Lodi's Mayor Fisk reports. When the garbage-free community idea is considered by your city council, In-Sink-Erator will gladly furnish any additional information and consult personally with city officials on this very important matter.

Your city, no matter what its size, can benefit from a city-wide plan that utilizes garbage disposers to eliminate garbage problems. For full details, a list of "garbage-free" communities, and sample city ordinances, write In-Sink-Erator Manufacturing Co., Racine, Wis.

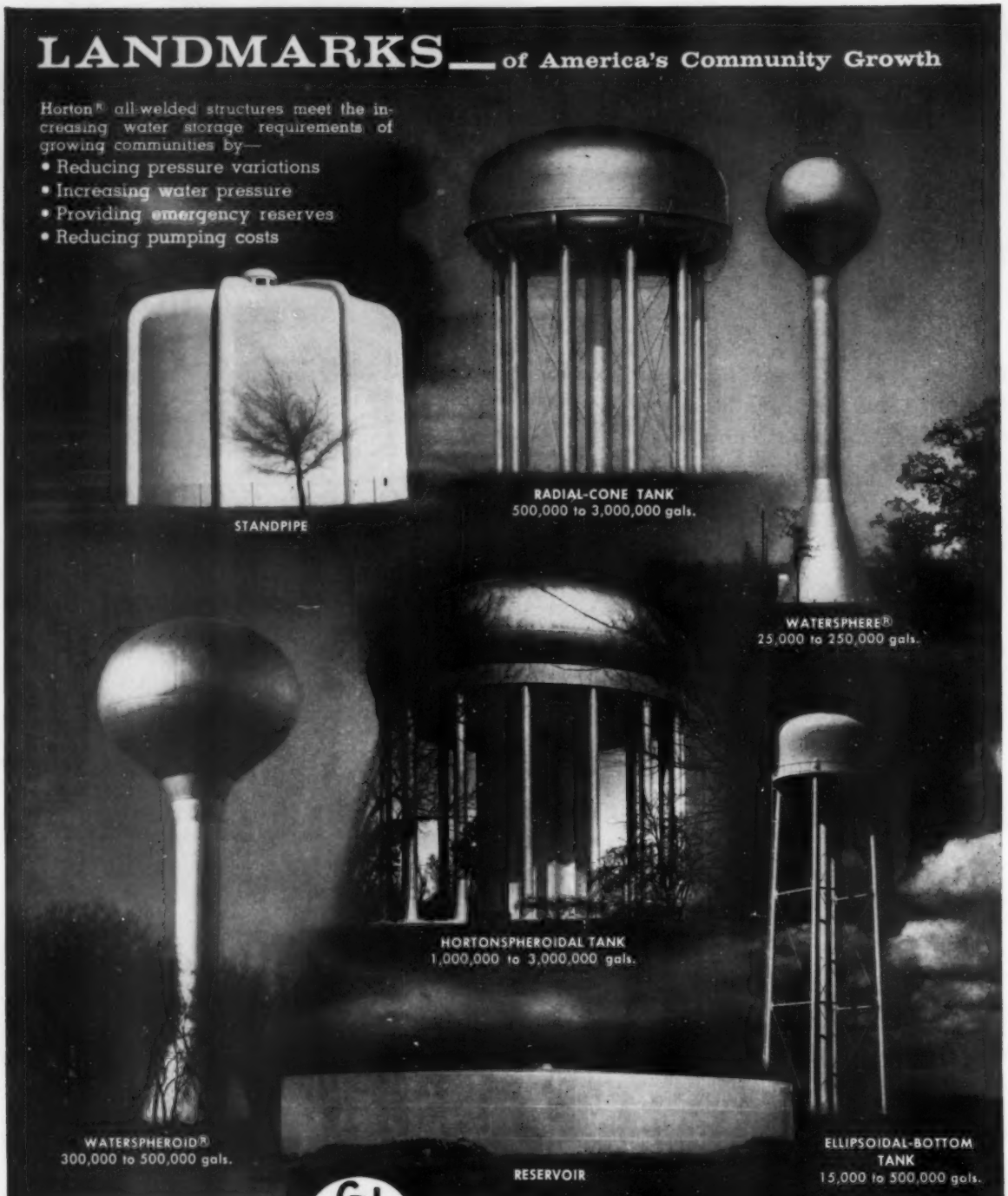
JOIN THE DRIVE SPONSORED BY IN-SINK-ERATOR AND *THE AMERICAN CITY* MAGAZINE FOR "GARBAGE-FREE" COMMUNITIES! WRITE TO IN-SINK-ERATOR TODAY!

IN-SINK-ERATOR MANUFACTURING CO., RACINE, WIS., ORIGINATOR AND PERFECTER OF THE GARBAGE DISPOSER

LANDMARKS— of America's Community Growth

Horton® all-welded structures meet the increasing water storage requirements of growing communities by—

- Reducing pressure variations
- Increasing water pressure
- Providing emergency reserves
- Reducing pumping costs



CB&I

Chicago Bridge & Iron Company

Atlanta • Birmingham • Boston • Chicago • Cleveland • Detroit • Houston
New Orleans • New York • Philadelphia • Pittsburgh • Salt Lake City
San Francisco • Seattle • South Pasadena • Tulsa
Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY and GREENVILLE, PA.

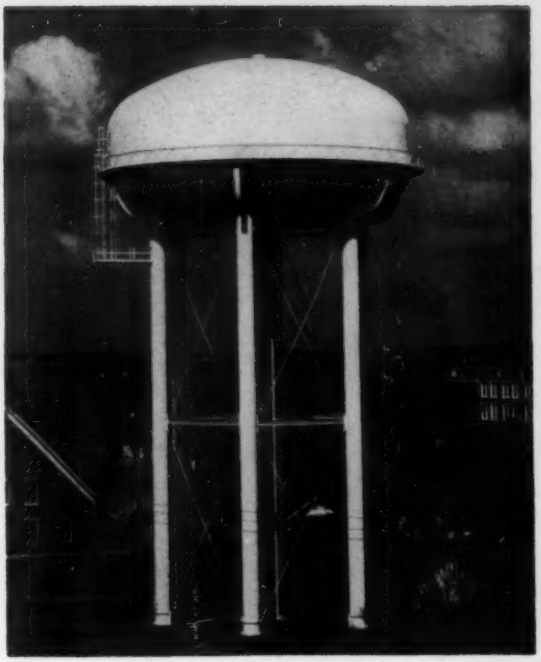
A specific answer to any municipal water storage or pressure distribution problem can be found in the range of capacity and style of structure offered by CB&I in Horton steel tanks. All are built in accordance with AWWA specifications. Write our nearest office for further details.

M42

No Actual Cost For Elevated Storage

Independence, Kansas now has a brand-new 750,000-gallon elevated water reservoir and certain improvements to its distribution system, without any real extra costs.

Prior to the installation of this storage reservoir, Independence's water supply suffered from lack of pressure. The Kansas Inspection Bureau, supported by the insurance companies operating in that state, had advised that this fault would make it necessary for fire insurance rates to be increased by an amount that would exceed the cost of strengthening the system. Independence chose to spend the money on a better water system and keep the fire insurance costs low. The actual increase in water rates was 20%. It financed a $158,000 improvement program.



This big 75,000-gallon Pittsburgh-Des Moines radial-cone tank now serves Independence, Kans. at no extra cost.

It Takes A Little Pull

In an effort to cut down non-revenue water pumpage, the borough started a program of service line replacement in 1951. Since the program started, our crews have replaced 91 out of 1501 existing services, thereby raising accounted-for water from 30% in 1951 to 62% in 1958.

Using our Huber-Warco Maintainer, we have reduced digging and repaving expense considerably. Basically, this is the procedure:

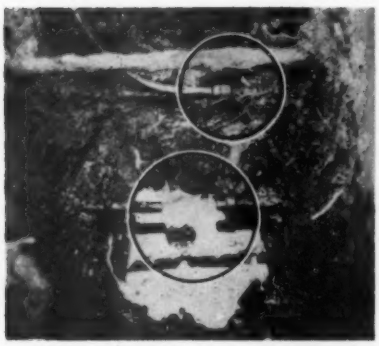
- **Dig up the badly leaking service at the curb and at the main.**
- **Attach new tubing to the old service at the curb.**
- **Secure a chain to the old service at the main; connect the chain to the tractor.**
- **Pull the old galvanized service out with the tractor; feed new copper tubing into the hole.**

We have found we can replace services 60 years old and 27 feet long by this arrangement, saving digging and paving expenses as well as making less of a traffic interruption.

The keystone of our leak program is the semi-annual sound survey by the meter reader. These surveys disclose a list of 30 to 40 locations that are suspect. Further investigation shows that five to ten of these are significant leaks, by and large, in the service line itself.

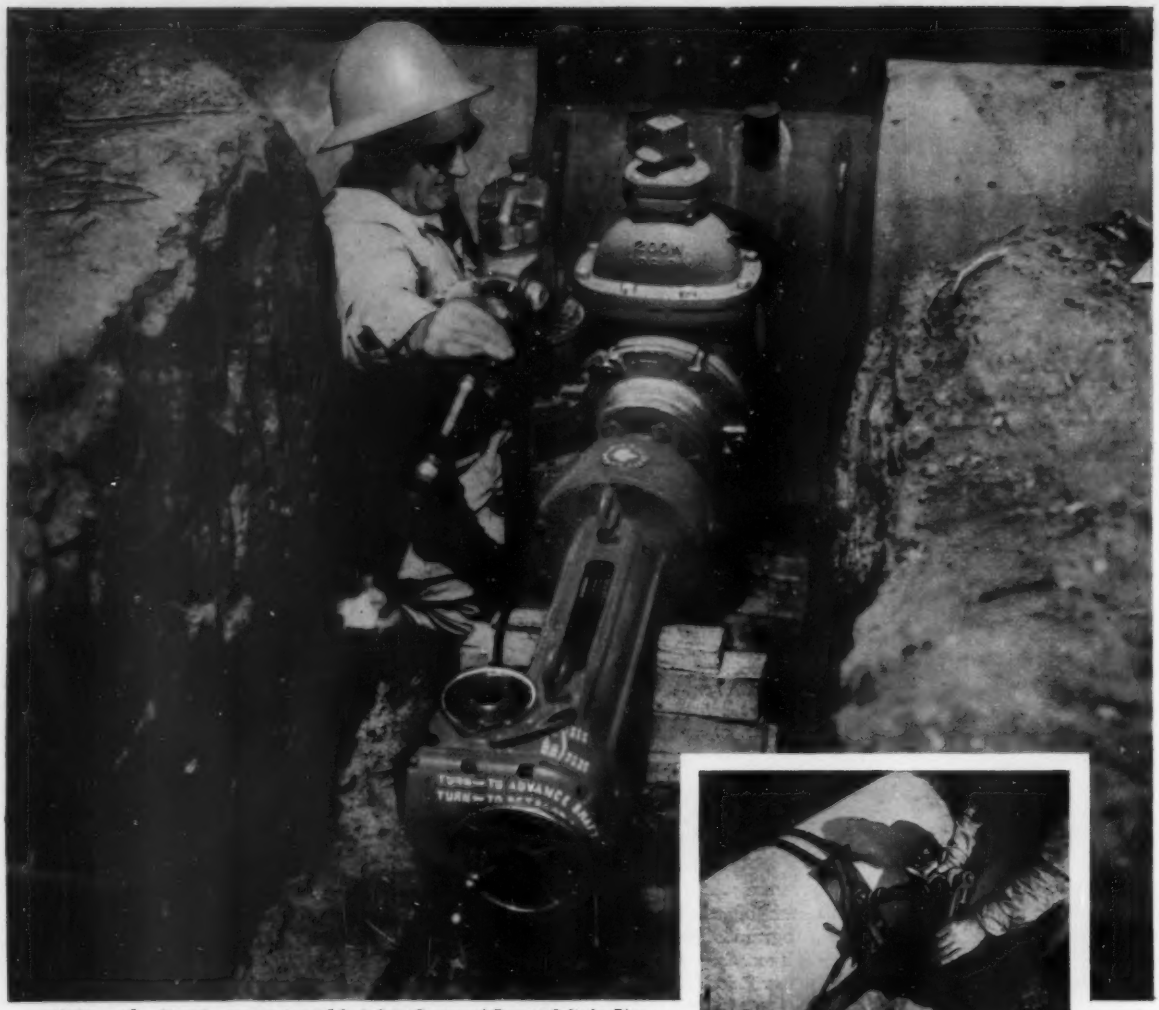
We no longer believe in clamping service line leaks but replace the whole line and install a curb meter at the same time.

DAVID J. BAUER
Borough Manager
Lititz, Pa.



Left:
Here are two leaking services dug up at the curb, ready for replacement. New copper tube has been attached to one service and a copper fitting to the other.

Right:
At the other end, the maintainer pulls out the old service with the aid of a chain. Only a small opening in the street over the main is required.



Making a 6" outlet under pressure in a 20" Lock Joint Prestressed Concrete Cylinder Pipe.

Tapping a 1" house connection under pressure in Lock Joint Concrete Pressure Pipe.

TAPPING LOCK JOINT CONCRETE PRESSURE PIPE

Simple...Efficient...Time-tested

Thousands of field installations have proved the ease and efficiency with which LOCK JOINT CONCRETE PRESSURE PIPE can be tapped under pressure. Service connections as well as larger outlets up to 36" in diameter can be made without interruption of service or damage to the line.

In addition to safe, easy tapping of all diameters, LOCK JOINT CONCRETE PRESSURE PIPE also combines long life, dependability, permanent high carrying capacity, ease of installation, and negligible maintenance. These features make it the logical choice for distribution piping as well as water transmission lines.

LOCK JOINT PIPE CO.

East Orange, New Jersey

Sales Offices: Chicago, Ill. • Columbia, S. C. • Denver, Col. • Detroit, Mich. • Hartford, Conn. • Kansas City, Mo. • Perryman, Md.

Pressure • Water • Sewer • REINFORCED CONCRETE PIPE • Culvert • Subaqueous

Stream Study Wins Student Science Prize

Fitzhugh Williams demonstrates radioactivity test on prize exhibit at the State Science Fair in Columbia.

Chemical and biological analysis of 249 samples of Reedy River water by Fitzhugh Wilson Williams, Greenville High School student, won for him the first grand award at a recent science fair at LeConte College, University of South Carolina, in Columbia, S. C.

Young Mr. Williams' study first was judged finest in the chemical division, then it won the grand award in competition with winners in the biology, geology, physics and mathematics divisions.

Collection and analysis required a period of 80 days (Dec. 1958-Mar. 1959), with samples taken from six sampling points along the river, which flows from northwest to southeast through the heart of Greenville. The first was located about a mile upstream from city limits; the second at the northern city line; three were within city boundaries and the sixth was on the southern edge, where the river flows out of municipal jurisdiction. A sometimes picturesque stream, especially where it flows through residential areas of the city, the river nonetheless has been a traditional receiving body for effluents from chemical, textile and other industrial plants in various degrees of required treatment under control of the state.

Testing Range

Chemical analysis, most of it performed in a basement laboratory in his home—and much of it with home-built equipment—involved testing for chlorides, sulfates, sulfides, sulfites, iron, oil, nitrates and starches. The only substances not normally found in samples were oil and sulfite. All the others were found in varying amounts from slight to moderate.

During biological testing, no evidence of fishlife was found, but some free, living animal organisms were discovered and a small number of aquatic plants were counted.

Williams supplemented these analyses with tests for radio activity, using a radiation counter (manufactured by the Nucleonic Corporation of America) in the laboratory of Furman University; tests to establish pH of the samples—usually in the range of 9.8—and suspended solids load by per cent of light transmittance. In the latter test, he used sterile water as the standard representing 100% transmittance, conducting tests on each sample at three different wave lengths. Naturally, some opaqueness (solids) was encountered in every sample taken.

More State Aid For Sewer Construction

State grants-in-aid for sewerage facilities representing 0.07% of construction costs will go to 139 communities in Pennsylvania. These will total $82,614 and are in addition to 1.4% grants paid previously.

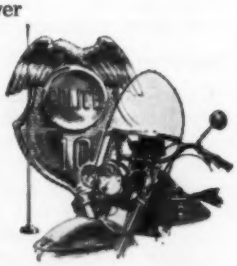
Communities receiving more than $1,000 include Philadelphia, $34,150; Altoona, $2,132; Bethlehem, $3,528; Central Delaware County Authority, $1,017; Darby Creek Joint Authority (Delaware County), $2,262; Easton, $1,134; Erie, $3,244, Muckinipates Authority (Delaware County), $1,498; East Washington Joint Authority (Washington County), $1,502; Williamsport, $2,489; York, $3,138; Upper Darby Township (Delaware County), $2,900; Mill Hall (Clinton County), $1,543.

STRETCHING THE LONG ARM OF THE LAW

Harley-Davidson police motorcycles are potent symbols of law and order — providing, on sight, the easy recognition so essential to crime and accident prevention.

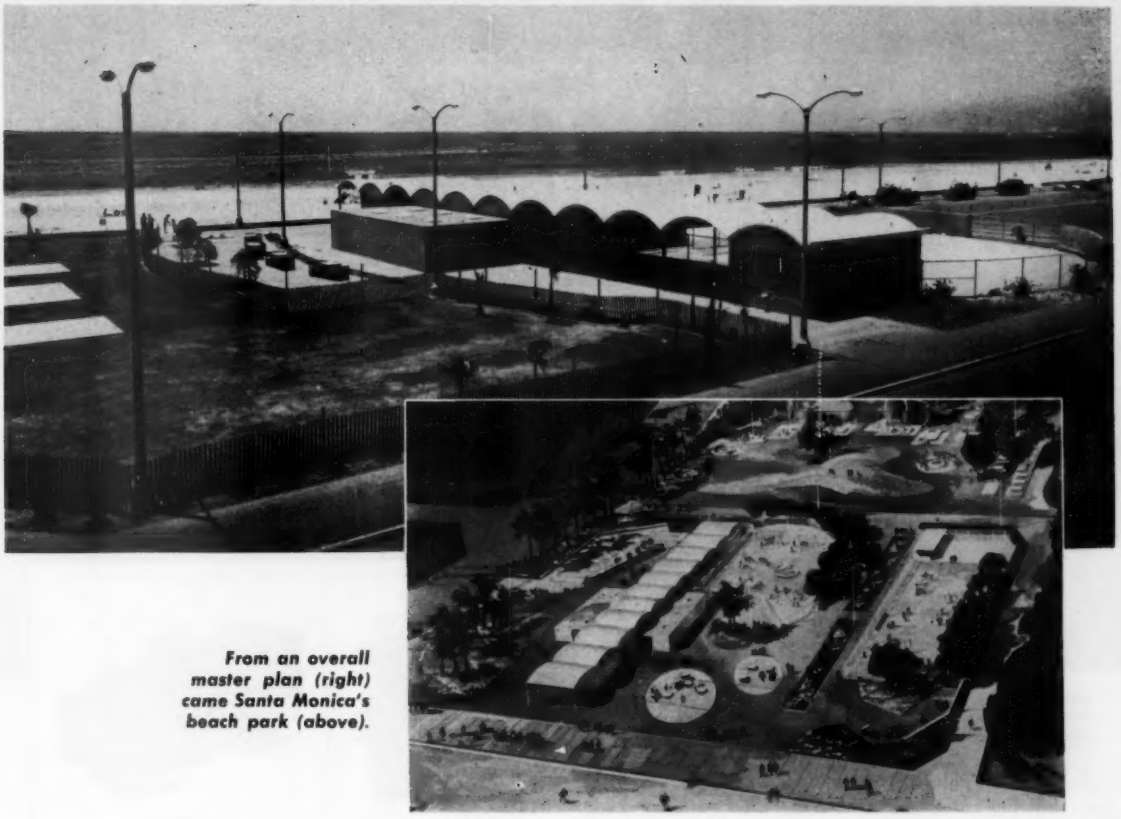
There is no arm of the law more flexible than officers mounted on 2-wheeled *Solos:* highly maneuverable in congested areas—yet, possessing swift striking power to curb speeders, apprehend criminals and handle emergencies. The versatile 3-wheeled *Servi-Cars* are the work-horses of efficient departments everywhere — busy around-the-clock patrolling, directing traffic and checking meters.

To learn more about how you can *stretch* your equipment and manpower dollars with Solos and Servi-Cars, see your dealer or write Harley-Davidson Motor Co., Milwaukee 1, Wisconsin.



HARLEY-DAVIDSON

Police Motorcycles



From an overall master plan (right) came Santa Monica's beach park (above).

State and City Develop Beach Park

Santa Monica, Calif. builds on state-supplied site; parking fees provide financing

By **RANDALL M. DORTON,** City Manager, Santa Monica, Calif.

The master plan for Santa Monica's attractive beachfront park has emerged from the blueprint stage to structures, shrubberies, playgrounds and parking areas.

The city operates the state-owned Beach Park under an agreement to last for 25 years. Under this agreement, the state acquires beach properties and the city clears them and builds the improvements. The city collects all revenue from these facilities but must use this revenue to improve the beach areas for public use.

The first stage provides a beach parking area for approximately 3,000 cars, four recreation areas and a lifeguard headquarters. One recreation area and the lifeguard headquarters have been completed; parking space for 2,500 cars was completed last year. The main building is a concrete block structure with a thin-shelled concrete roof.

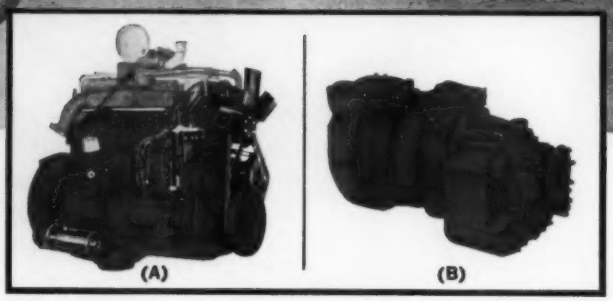
Revenue from parking fees has made the improvement self-supporting. The parking area is operated by attend ants. Rates charged are as follows:

	April thru Sept.	Oct. thru March
Mon.-Thurs., incl.	35c day and night	25c day and night
Friday	Until 6 pm, 35c	Until 6 pm, 25c
	After 6 pm, 50c	After 6 pm, 50c
Sat., Sun., holidays	Until 6 pm, 75c	50c day and night
	After 6 pm, 50c	

To light the area, the city has supplied 400-watt, 20,000-lumen mercury vapor lamps installed in Westinghouse OV 20 luminaires. They are mounted on concrete standards manufactured by Pacific Union Metal Company.

Between July 2 and December 3 of last year, the beach parking lot grossed $114,000. Of this, 23% was required for maintenance and operation and the balance remained for new construction.

Only the best for Glen Ellyn, Ill. Their new Mack canopy-cab-forward pumper seats five . . . has 3-stage, 750 gpm pump, 5" front suction connection and 1000-gallon booster tank . . . power steering and air brakes . . . features "Perfect Pair" 276 hp Mack Thermodyne 707C engine **(A)** with automatic transmission **(B)**.



Mack "Perfect Pair" automatic power train is going great guns

These progressive departments have specified Mack fire apparatus that feature "Perfect Pair" power train: automatic transmission perfectly matched with Mack 276 hp Thermodyne® engine.

Baldwin, N. Y.	New York, N. Y.
Berlin, Conn.	Oreland, Pa.
Fort Lee, N. J.	Phoenixville, Pa.
Glen Ellyn, Ill.	Rockville Centre, N. Y.
Muskogee, Okla.*	Springfield, Ohio

*Callery Chemical Co.

Reports from many of these communities stress the improved performance they get with automatic transmissions—faster running times, easier handling, and greatly reduced driver-training time.

Ask Mack soon for a demonstration and literature that will fully acquaint you with Mack "Perfect Pair" power train. Mack Fire Apparatus, Allentown, Pennsylvania. In Canada: Mack Trucks of Canada, Ltd.

6827

MACK
FIRST NAME FOR
FIRE APPARATUS

COMPLETE LINE OF PUMPERS—500 to 1250 GPM . . . SQUAD AND HOSE WAGONS . . . AERIALS 65' TO 100' . . . COMBINATION LADDER TRUCKS

Tone Dialing Permits Greater Radio Use

When unexpected guests came to dinner, Mother cut the pie into thinner slices. This is exactly what the communications industry has been doing over the years in mobile radio. The same amount of spectrum space has been divided into more channels by reducing the band width of each channel. Tone signalling is another technique that permits greater channel utilization.

One form of tone signalling is tone dialing in which you use a telephone dial for sending a coded series of tone pulses. What advantage has one tone signalling system over another? Which is used is dependent on the factors of economy, number of selections to be made, freedom from falsing required, and speed of operation.

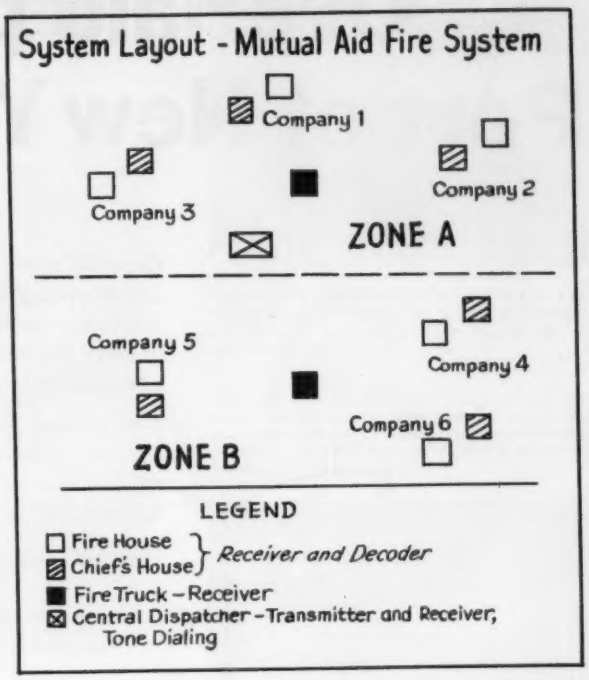
For protection against on-channel interference from co-channel users in the same area, a tone squelch system, using a continuous tone with low deviation and a frequency below the pass band of 300 to 2,000 cycles per second, is best suited. For systems where one-way selection of mobile units or the selection of multiple functions over a radio link are required, a single tone pulse using tones within the pass band with a high Q tone receiver is ideal if not more than 30 or so different selections need to be made. This system would provide speed of operation, reliability, and economy.

If a larger number of independent selections have to be made, two-tone signalling provides the answer. Selection of tones, two at a time, will permit 100 codes. Additional tones will of course provide many more codes.

However, as the number of desired selections increases, if only moderate speed of selection is required, the tone dialing system becomes more economical to use, since it requires less tone generating and switching equipment at the sending end.

When you need to select a number of receiving points and select several functions at each, or to use two-way signalling with multiple selections from both ends, tone dialing presents the most practical solution now available.

A simple application of the ability of the selector to respond to several different codes would be in a Mutual Aid Fire system. The illustration shows 6 fire companies, with a receiver at each firehouse and the Fire Chief's house, with the district divided into two zones. If the fire co-ordinator's dispatch point is equipped with tone dialing and the receivers at the fire houses and chiefs' houses with Secode selectors set up with multiple pins, you could perform the following functions: blow sirens individually; signal fire chiefs individually; sound sirens; and alert all chiefs in one or both zones; alert all fire chiefs only.



Instead of the Zone A and Zone B selection, the codes could be used for initiating a civil defense alert and all clear signals.

Of course the base transmitter would still be used in the normal manner for voice communication with the fire department.

H. H. Davids
General Electric Company
Syracuse, N. Y.

Stop Mugging in the Parks

With the warm weather we expect increased use of the parks and the beaches. It is an outrage that New York City's great park system cannot be used to its fullest extent because of the depredations and violations of law by a few. When you go over just a few blocks from here around the East Side in the sweltering heat of summer and you see mothers with little children who can't use these parks because they're worried about the crimes that might possibly be inflicted upon them, it is something that just makes your blood boil. And it is something that should be and must be corrected.

The mugger, the thief, the ruffian, the sex deviate, the sadist, the rapist and our lawless youth gangs and the bums, will infest and take over these parks and beaches, if they are allowed. Our job is to safeguard the people in their lawful use of the parks.

Now I suppose there will be some who will criticize the assignment of a large number of men and women to this duty in the parks. However I think that once you make it known, unmistakably known, to the fellows who decide to take over the park that they just can't get away with it, the problem will in great part disappear.

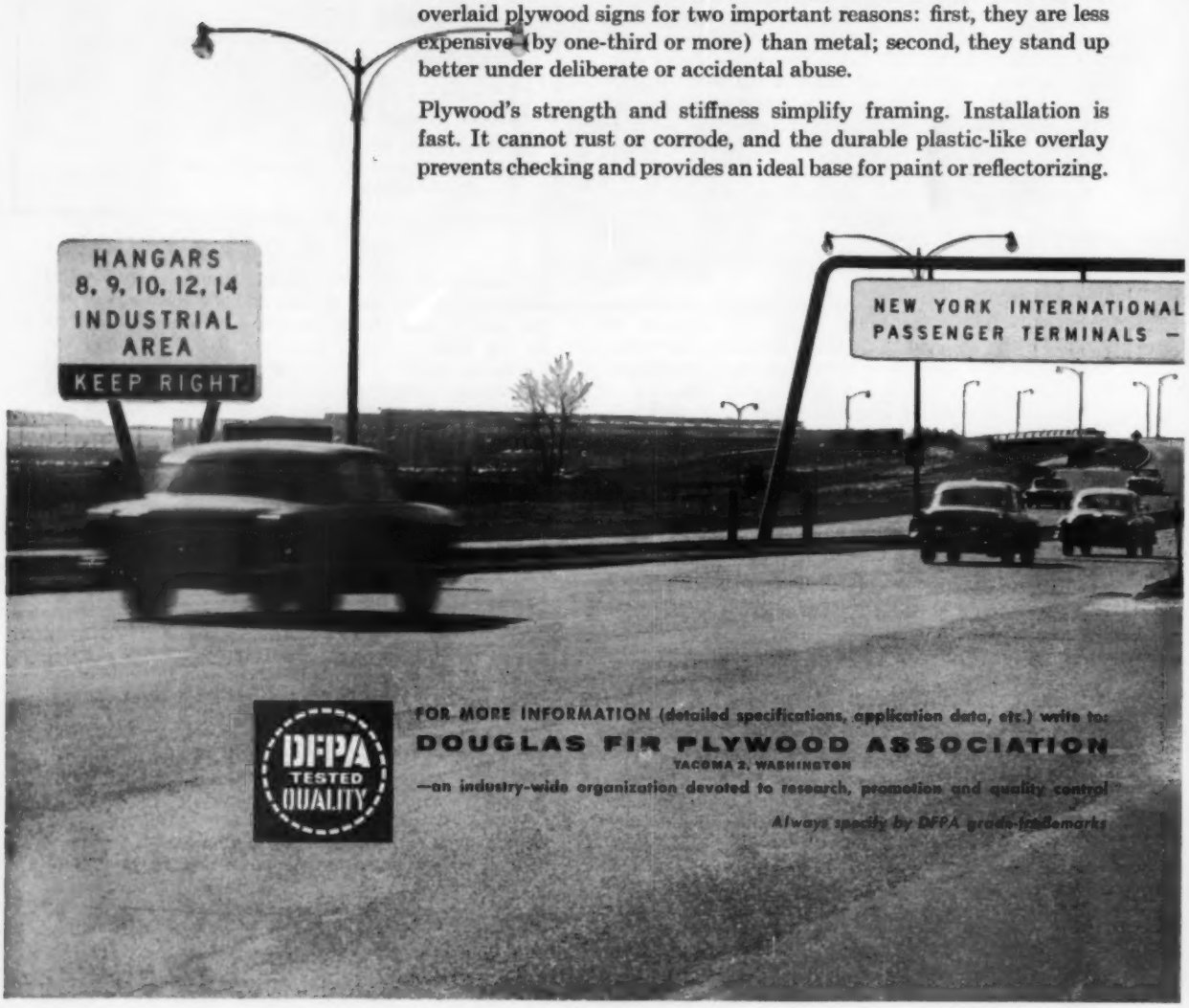
Stephen P. Kennedy
Police Commissioner, New York City

Overlaid plywood signs Port of New York Authority

GUIDING TRAFFIC to and through the busy airports, tunnels, bridges and highway approaches that compris he Port of New York Authority facilities are modern color-coded overlaid plywood signs of every size and type—regulatory and directional . . . illuminated and non-illuminated . . . overhead, cantilevered and shoulder mounted.

Port of New York Authority traffic engineers make extensive use of overlaid plywood signs for two important reasons: first, they are less expensive (by one-third or more) than metal; second, they stand up better under deliberate or accidental abuse.

Plywood's strength and stiffness simplify framing. Installation is fast. It cannot rust or corrode, and the durable plastic-like overlay prevents checking and provides an ideal base for paint or reflectorizing.



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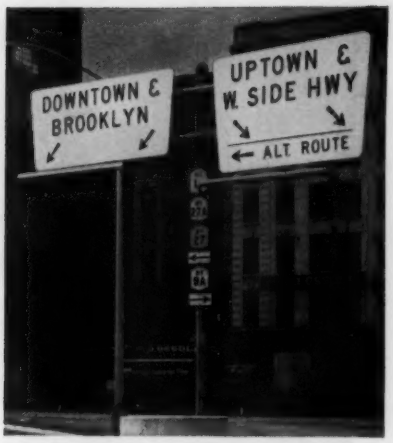
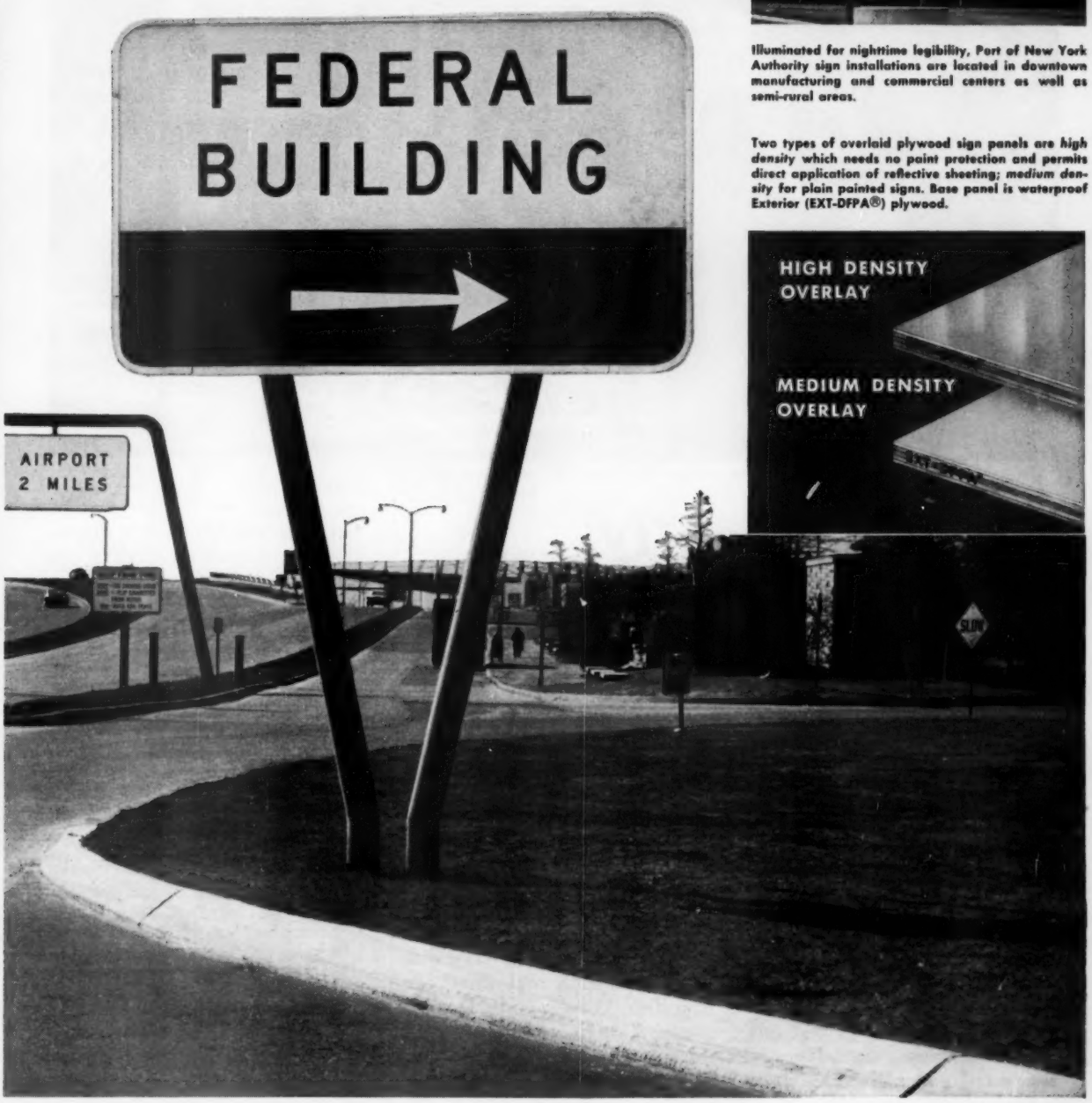


Illuminated for nighttime legibility, Port of New York Authority sign installations are located in downtown manufacturing and commercial centers as well as semi-rural areas.

Two types of overlaid plywood sign panels are *high density* which needs no paint protection and permits direct application of reflective sheeting; *medium density* for plain painted signs. Base panel is waterproof Exterior (EXT-DFPA®) plywood.



His community showed the way...

Chief Thomas F. Gorman of Quincy, Massachusetts, knows that this new home will have adequate fire protection facilities. His city recently became the first municipality to pass an ordinance requiring that all new residential and institutional construction have fire detection and alarm facilities within its confines.

Chief Gorman feels that this supplement to the city's Gamewell Type A Fire Alarm System now gives Quincy the most advanced fire prevention and protective facilities available. All residential and high value areas are adequately covered by strategically located curb boxes. In addition, Master Boxes tie all hospitals, public schools and a great many of the larger industrial buildings into the municipal system. In a matter of seconds after any box is pulled, Quincy's entire fire defenses, as well as police and waterworks, know its location.

Make certain that *your* community officials and safety authorities know about Quincy's positive steps toward reducing loss of life and property. Gamewell Company will be happy to supply copies of this ordinance for your use. And, if you desire, we'll conduct a fire survey to assist you in planning or expanding your alarm system. Write the Gamewell Company, Dept. 3B, Newton Upper Falls 64, Massachusetts.

Recent New Installations of Gamewell Fire Alarm Systems

- Chester, Penna. .... Type "A"
- Las Vegas, Nev. .... Type "B"
- Alexandria, La. .... Type "B"
- San Jose, Calif. .... Type "A"

Gamewell

FIRST...WHEN SECONDS COUNT

U. S. and Foreign Cities Affiliate in "People-to-People" Program

The "People-to-People" program which grew out of a White House Conference in September 1956 has resulted in many American communities affiliating with cities in other countries.

The program aims at building massive communication ties between Americans and the citizens of other lands on a personal level rather than through official government channels. It has established bonds between:

Coral Gables, Fla.	Cartagena, Columbia, South America
San Diego, Calif.	Yokohama, Japan
Cortland, N. Y.	Pashawar, Pakistan
York, Pa.	Arles, France
Boston, Mass.	Kyoto, Japan
Montclair, N. J.	Graz, Austria

. . . and many others.

Any American city can participate. Interested civic leaders generally form a committee and appoint their Mayor as honorary chairman. They select a foreign city—usually on the basis of size or similar economic and historical interests. Then they plan projects, such as exchange of visitors, organized tours, photo exhibits, exchange of magazines and club affiliations.

When all plans are ready, the Mayor submits them to the American Municipal Association, 1625 H Street, N.W., Washington 6, D. C. Operating as part of the Civic Committee of the People-to-People Program, the AMA gives any desired advice and information and clears choices for sister cities through appropriate overseas channels.

After the AMA arranges clearance, the Mayor starts the program by sending an introductory message to the Mayor of his sister city overseas.

Governmental Costs In Downtown Area

A cost-revenue analysis of governmental services in central business districts will be undertaken this year by Raymond J. Green as part of his graduate study in the Department of City and Regional Planning of the University of North Carolina. A $2,400 grant-in-aid has been awarded to Mr. Green, assistant planner with the Charlotte Mecklenberg Planning Commission, by the J. C. Nichols Foundation of the Urban Land Institute, Washington, D. C.

Air Pollution Control Notes

Air Sampling Network Grows

Three widely separated communities have joined the National Air Sampling Network of the United States Public Health Service. They are ***York, Pa.***; ***New Britain, Conn.***; and ***Shreveport, La.***

A Stitch in Time . . .

Dr. Garold L. Faber, Fresno County (Calif.) health officer, has suggested that the city of ***Fresno*** establish an air pollution control committee because of the possibility of serious air pollution in the San Joaquin Valley. Dr. Faber said the committee should include county, city, and fire district officials, local representatives of the United States Weather Bureau, the agricultural extension service, farm organizations and the chamber of commerce. His suggestion was made after he had studied the results of more than a year's sampling of Fresno's air.

Smog Hurts Citrus Crop

O. C. Taylor, assistant horticulturist at the Citrus Experiment Station of the Riverside campus of The University of California, has revealed that tests show that smog is a factor which can cause excessive drop of citrus crops. Grapefruit and lemon underwent the experiments.

Wheeling, W. Va., Provides Inspection Program

The City Council of ***Wheeling, W. Va.***, has passed an amendment to the city's smoke abatement ordinance, which will require the city's homeowners, businessmen and industrialists to pay a fee to the Wheeling Air Pollution Control Authority, to have furnaces and other fuel-consuming devices inspected once every three years. The inspection fee is $2 for homes and small businesses and $5 for larger furnaces of industrial plants. The fees are being levied, officials said, in order to provide the Air Pollution Control Authority with sufficient funds to hire personnel to carry out the program of inspections.

Court Chokes on Smog

Los Angeles has just come through one of the smoggiest seasons in recent years. Even the courts took judicial notice of that fact. In Superior Court recently, trial of a personal injury suit was delayed for twenty minutes, while a woman juror underwent a choking spell. When the trial resumed, the judge noted that the day was "one of the smoggiest we've had this year, as was yesterday." He added: "The room reeks of smog this morning. I want the record to show that."

More Trees Needed

If your city is worrying about air pollution, particularly about the kind that is emitted by automotive vehicles, you might want to consider the advice of Dr. Chauncey D. Leake, president-elect of the American Association for the Advancement of Science. Dr. Leake's answer to the problem? Plant trees. Trees take in carbon dioxide the way humans take in oxygen. Trees discharge oxygen. When things are in balance in the world, Dr. Leake says, everything is fine. But, when carbon dioxide gets the upper hand, atmospheric temperature rises and someday, if unchecked, it might get hot enough to melt the polar ice caps. Says Dr. Leake: "We are disturbing this balance in a sudden and startling way. We are dumping tons of carbon dioxide, along with a lot of other poisonous materials, into the air from the engines that run our automobiles, trucks and airplanes. Meanwhile, we are cutting down our trees, destroying our forest lands and making deserts in our cities. We are in a fair way to getting badly out of balance before we know it." According to Dr. Leake, you need about a dozen trees putting oxygen into the air while taking carbon dioxide out of it, to balance one automobile which is doing just the reverse. About a hundred trees equal one truck and several hundred trees have to be matched against one airplane.

Our Municipal Notebook (Continued)

Planning Engineers Hold Anniversary Meeting

The American Society of Civil Engineers' City Planning Division celebrated its 35th anniversary during the Los Angeles convention of the Society recently. Some of the engineer-planners taking part in the affair were Harold M. Lewis, consulting engineer-planner; L. S. Storrs, director of planning for San Marino, Calif., and president of the Southern California Planning Congress which co-sponsored the dinner; ASCE President Francis S. Friel; and Everett B. Mansur, vice-chairman of the Division's executive committee and past president of the Southern California Planning Congress.

Who Gets the Profits from Slum Properties?

A survey* of a 20-block area in New York's most congested housing district, recently completed by Dr. Chester Rapkin, economist and city planner, has revealed:

1. A square foot of space in a low-quality, overcrowded brownstone rooming house brings in an average of $2.30 per square foot in rent. Whereas the same square foot of space in a well-maintained, elevator apartment in a good neighborhood brings in only $1.30 in rent.

2. Contrary to general belief, the slum landlord does not get all the profit from these high rentals. A large proportion of it goes to shady "get-rich-quick" financers who lend money on slum properties on short-term mortgages at high rates of interest plus premiums of from 10% to 30% above the face value of the mortgage.

3. Most of these mortgages, besides carrying usury interest rates, require 10% repayment on demand, and the remaining 90% on terms of five years and less.

As remedies, Dr. Rapkin makes these recommendations:

A. That the city enforce its occupancy laws.

B. That more reputable finance companies be encouraged to enter the mortgage-financing field and advance money for property reconditioning at less usurious rate of interest, and

C. That the city should take the profiteering out of slum-landlordism by raising its rates for increased occupancy—this was more implied than stated.

* The Real Estate Market in Urban Areas—City Planning Commission, 2 Lafayette Street, New York, N. Y. $1.

More and More Babies

Municipal officials in planning for the future should bear in mind the fact that births in the United States continue at an unprecedented high level. According to the Metropolitan Life Insurance Company, for five years in succession, the annual crop of babies was well over 4 million. In each of these years nearly 1 out of every 6 married women under 45 bore a child, whereas around 1940 the corresponding proportion was not quite 1 in every 8. Although births declined from their all-time high of about 4,300,000 in 1957 to about 4,240,000 in 1958—and are expected to decrease somewhat further this year—the end of the baby boom is not yet in sight. The indications are that the number of births will remain around the 4 million mark in the years immediately ahead. Moreover, it is likely that births will climb to new high levels after the mid-1960's, when the postwar babies begin to reach marriageable age and start their own families.

The upsurge in births started after the end of World War II with a sharp rise in the number of families having their first child. At its peak in 1947 the rate for first births reached 69 per 1,000 married women under 45 years of age, but within three years it dropped below 50 per 1,000. More recently the baby boom has been sustained by the large number of established families having another child. Since 1947 the annual rate for second children has remained close to 45 per 1,000 or about 1½ times the rate which prevailed in the mid-1930's.

Even more noteworthy has been the continued rise in the rate for third births, which has increased without interruption since the late 1930's. In 1957 the rate reached 33 per 1,000, or almost twice that of two decades ago and the highest in at least 40 years. Equally striking is the fact that an increasing number of families are now having a fourth or fifth child. The annual rate for fourth births has climbed from 10 per 1,000 wives under age 45 in 1940 to 19 per 1,000 in 1957. Similarly, the rate for fifth births almost doubled during this period rising to 11 per 1,000. Despite these marked upswings, the rates for fourth and higher birth orders still are well below those which prevailed at the time of World War I and earlier.

With the shift toward moderate-sized families, third and subsequent births have increased in importance, their proportion of the total rising from 38% in 1940 to 46% in 1957. Yet, because of earlier marriage and family building, most American children still are born to relatively young parents. Currently almost three-fifths of our babies are born to mothers in their twenties and nine-tenths to those under 35, or virtually the same proportions which prevailed in 1940.

St. Joseph City Employees Form Credit Union

Employees of the City of St. Joseph, Mo. recently formed their own credit union, according to the Credit Union National Association, Madison, Wis. At present there are about 500 of these financial self-help groups serving city employees and about 25,000 more serving employees of other groups.

Each credit union is an independent, nonprofit corporation owned by its members and providing them with a convenient place to save and a source of low cost credit for worthwhile purposes. Credit unions do not deal with the general public.

More than 12,500,000 members in 35 countries belong to credit unions.

Layne pumps top more producing water wells

Layne Pump Design, manufacture and installation are only part of the complete water service offered by the Layne organization. Other services include: Initial surveys, explorations, recommendations, site selection, foundation and soil sampling, well drilling, well casings and screens, gravel wall wells, construction of water systems, complete research staff and facilities, maintenance and service, chemical treatment of water wells, water treatment. *Write for Bulletin No. 100.*

WORLD'S LARGEST Layne WATER DEVELOPERS

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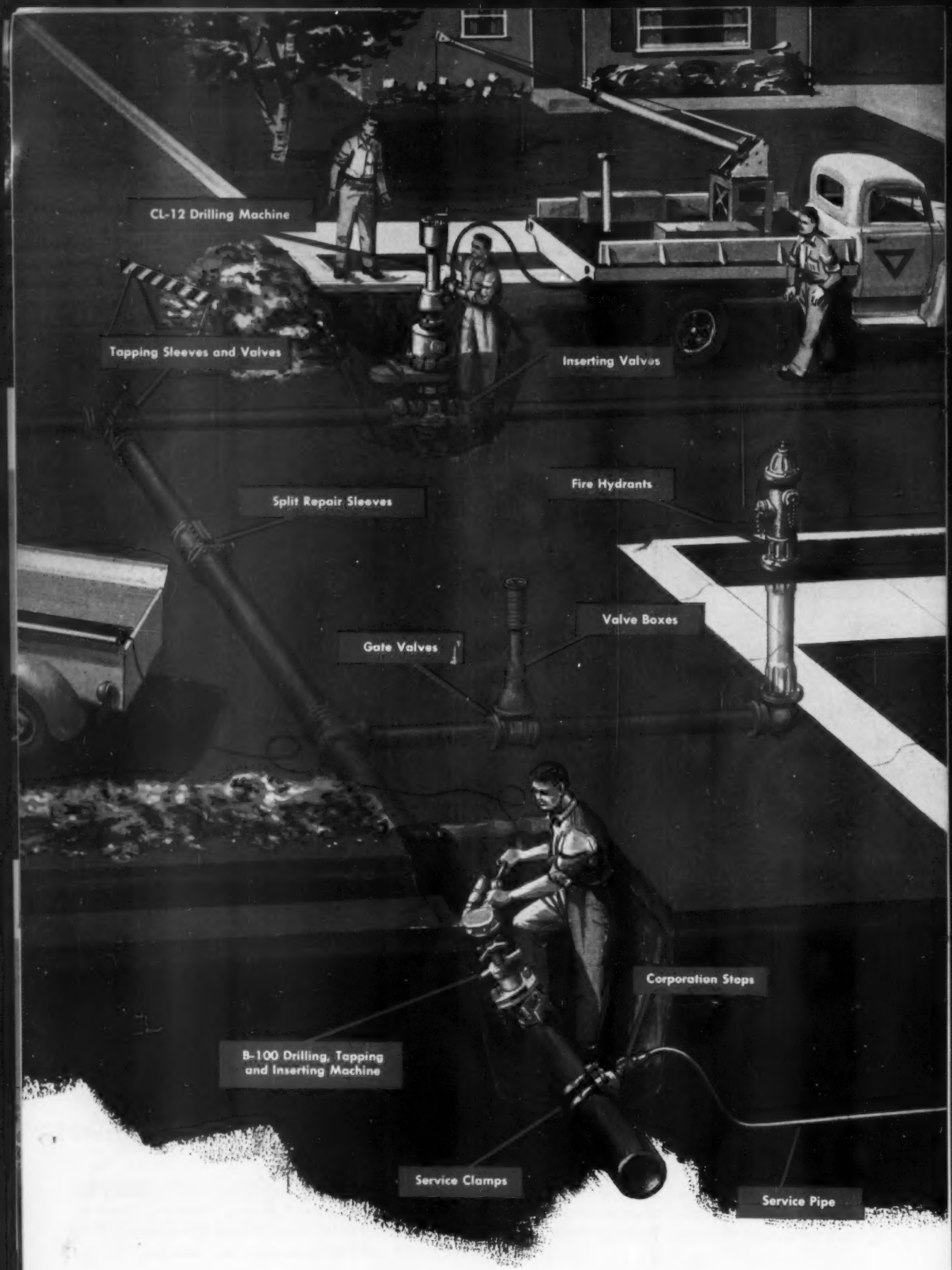
Offices and Factory • Memphis 8, Tennessee
LAYNE ASSOCIATE COMPANIES THROUGHOUT THE WORLD

Visit our Booth #55-58, AWWA Convention, San Francisco, July 12-17


CL-12 Drilling Machine
Tapping Sleeves and Valves
Inserting Valves
Split Repair Sleeves
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Gain longer, more dependable service with reduced maintenance costs. Insure uniform product quality and reduced costs by utilizing one source of supply.

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Specify Mueller, all along the line.

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Factories at: Decatur, Chattanooga, Los Angeles;
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BIG SIX Performance

GIVES YOU

GREATEST ECONOMY

Only from lowest maintenance costs and most productive time can you get greatest operating economy.

Only from Gar Wood... only from the new Load Packer 600... only from Big Six performance can you get advanced engineering features that insure greatest operating economy.

Get the complete Load Packer 600 economy story from your Gar Wood-St. Paul truck equipment distributor.

Here's economy proof with the new Load Packer 600...

- **LARGEST LEGAL PAYLOAD**—Minimum dead weight. Front-mounted telescopic hoist eliminates heavy, conventional hoist sub-frames. Carry more... *more productive time.*
- **GREATEST COMPACTION**—Direct thrust compaction packs more per yard than any competitive unit. Fewer unloading trips—*more productive time.*
- **FASTEST PACKING CYCLE**—Crew starts reloading in just 4 seconds... full cycle takes only 10 seconds. More speed—*more productive time.*
- **BIGGEST HOPPER**—74 inches wide, 1½ cubic yards capacity. Three crewmen load simultaneously—*more productive time.*
- **LOWEST HOPPER**—Over four inches below the truck frame. Quicker and easier loading—*more productive time.*
- **SAFEST, SIMPLIFIED, DEPENDABLE OPERATION**—Controls are simple, foolproof. Fewer moving parts, less linkage, fewer adjustments—*lower maintenance costs.*

NEW

LOAD-PACKER® 600

Gar Wood

INDUSTRIES, INC.

Wayne, Michigan • Richmond, California

Left:
Some up-close instruction gives the basic know-how on gutter-broom maintenance.

Right:
Classroom work formed an important part of the training.

Long Beach Benefits from Street Cleaning School

Long Beach, Calif., was a party to a training program recently on how to improve the efficiency of the city's street sweeping operation. The in-service schooling took the form of classroom work, machine demonstrations, and a tour of a local sweeper manufacturing plant.

The school was organized by the Brown-Bevis-Industrial Equipment Co.'s representative, Glenn H. Thompson. Mr. Worth Johnson, Manager of the Long Beach Refuse Collection Division, and Clarence Price, Assistant Manager, cooperating with Vern Cheuvront, Superintendent of the Automotive Division of the company, developed the objectives.

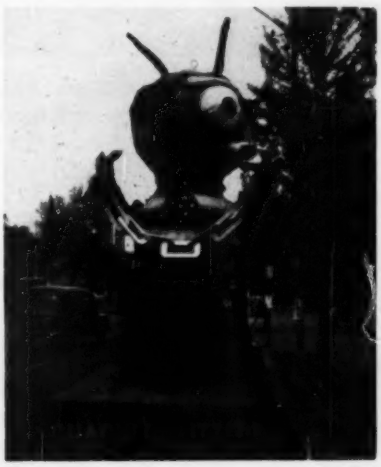
Two Saturday sessions were attended by all the personnel operating Long Beach street sweepers, street and sanitation supervisory personnel, maintenance personnel and mechanics responsible for special equipment, and a number of potential special equipment operators. City employees attended on a voluntary basis. The Wayne Manufacturing Company and Brown-Bevis-Industrial Equipment Co. provided the technical personnel, transportation, service manuals and outlines for the two-day school.

The first phase of the program was a visit to the Wayne plant in Pomona, Calif. During the tour the group inspected all component parts of sweepers while in the process of assembly.

The second Saturday of the program was held in the Long Beach sanitation yard. Bob Miller, Field Engineer for Wayne, conducted classroom work using outlines, movies, slide films, and literature. Sweeping techniques were described in detail and many of the fine points of operation were covered in a final classroom session. The demonstration phase of the school was conducted on city-owned sweepers in the city sanitation yard.

City sanitation officials were well pleased with the results of the school. "This kind of training is good for the city and good for city employees," said Walter L. Whitesell, foreman of the Long Beach Refuse Collection Division. "It not only enables us to improve the skill of our present operators, it helps us to develop a backlog of trained personnel for the future." Jim Smith, maintenance mechanic for the City of Long Beach, was equally enthusiastic about the program: "Even though I have worked with sweepers for 15 years I was able to learn much from this two-day program."

World's Largest Litterbug



Philadelphia is the home of the world's largest litterbug. However, the 12-foot monster, right out of Dante's *Inferno*, is shackled to emphasize this year's clean-up campaign theme, "Shackle the Litterbug."

The giant "bug," fabricated in Mardi Gras style, is mounted on a flat-bed truck for ready mobility. It played a leading role in the campaign's inaugural parade held on May 1. The parade included displays of sanitation equipment, high school bands, police and firemen's bands and additional floats urging public cooperation in the clean-up drive.

DANGEROUS WATER. Not long ago, faulty sewage disposal too often contaminated lakes and rivers... made them unfit for bathing, drinking or fishing.

MODERN SEWERAGE SYSTEMS, in which cast iron pipe and fittings are used, play a major role in keeping America's water clean, pure and wholesome... safe for bathing and drinking.

U.S. cast iron PIPE

FOR WATER, SEWERAGE AND

U. S. PIPE AND FOUNDRY COMPANY

but better than ever today!

Exacting quality checks from mine to main assure U. S. Pipe dependability

With leadership goes responsibility . . .

Cast iron pipe, for example, long recognized as America's basic water carrier, must be dependable and long-lived.

U. S. Pipe makes sure it is. By constantly checking and rechecking its pipe from start to finish . . . from mining to final casting.

The water officials who do such fine work planning and protecting the nation's water supply can be sure of this:

In U. S. cast iron pipe they have a fine ally to work with.

COKE, being discharged on coke wharf, has been made in our modern ovens from carefully blended mixture of coals obtained from U.S. Pipe mines.

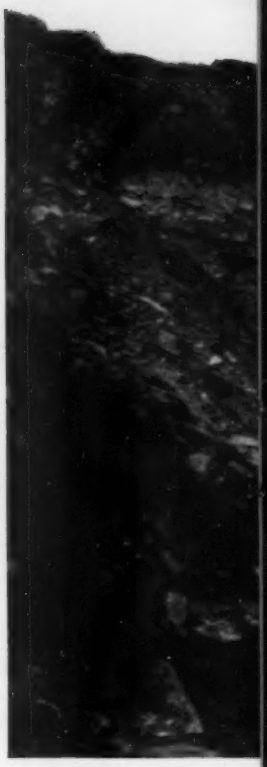
HOT PIPE is inspected and weighed before entering the heat treating furnace. Each length of U. S. Pipe is subjected to temperatures automatically controlled for uniformity.

THE SPECTROGRAPH is used by U. S. Pipe to make timely and accurate chemical determinations . . . one of many quality checks that assure top performance of U. S. Pipe.

INDUSTRIAL SERVICE CAST IRON

Birmingham 2, Ala. *A wholly integrated producer from mines and blast furnaces to finished pipe.*

Shattering shale-like material for fast easy loading—with the Drott scarifier attachment for the TD-15 4-in-1. This outfit tends the sanitary fill operated by East Pennsboro Township, Enola, Pa. "This operation calls for a dozer, ripper, clamshell, and loader, and the 4-in-1 with scarifier does the whole job," states Operator Ted Klischer.



With clam lip lifted (hydraulically) this TD-9 4-in-1 becomes an earth-rolling, radius-controlled bulldozer! Owned by Noble County, Oklahoma, the unit is used to build haul roads for rock quarry trucks; remove overburden from deposits of road-surfacing stone; shatter the stone with scarifier; load stone on trucks to surface county roads!

How clam-action 4-in-1 gives

Applying uniform cover on refuse, this TD-9 4-in-1 illustrates exclusive clam action, vital to successful and economical sanitary landfill operation. Unit, owned by Borough of Hanover, Pa., operates a sanitary landfill serving 26,000 people.

Use easily-controlled clam action to fill the 4-in-1 with elusive loose materials (like this crushed stone)—in one fast gulp. And use this quick, stand-and-fill clamshell action for speedy, close-quarters loading!

Working for the Town of Charlottle, N. Y., this TD-9 4-in-1 is clearing brush and trees from right-of-way—helping widen a road for two-lane traffic. See how the 4-in-1 "clams" on to an uprooted sapling, for easy loading and removal!

Exclusive 4-in-1 "concrete-bucking" pry-over-shoe break-out action—breaks up, digs up, and loads out old pavement—gives shovel-like excavating power for many other tough jobs. The new TD-15 4-in-1 exerts 39,200 pounds of break-out force!

"Back-dragging" borrow material down by the truck-load, this new 2¼ cu. yd. TD-15 4-in-1 shows a popular (and exclusive) method of producing refuse "cover" for the sanitary landfill—or street-surfacing materials, wholesale. This same action can be used to clean or reshape ditch banks.

your city a BIG-CAPACITY "*one-man equipment fleet*"

with instant changeovers; versatility unlimited... all for one moderate investment!

Simply move the selector lever from the operator's seat—stopped, or on-the-go—and get your choice of machine actions to do an unlimited variety of cost-cutting operations! City and county officials everywhere are proving the exclusive 4-in-1 deserves to be called the "40-in-1," because of the endless types of specialized outfits it can replace!

Your clam-action 4-in-1 can demolish and load-out unwanted pavement, curbings, or sidewalks—clear land and rough out new streets—install culverts with "mass-production" speed—build reservoirs, level land and landscape. It can give amazingly low costs, producing and loading street surfacing materials from pit or bank, and can spread them accurately.

This one-man-operated "equipment fleet" can give you power-shovel-like digging force for tough excavating, or can grade or strip with inch-close accuracy. And able to "double" for four big-capacity machines, at a fingertip nudge, the exclusive clam-action 4-in-1 handles the whole shebang of sanitary landfill jobs—with the efficiency and economy to leave old-style single-action loaders with their buckets dragging!

See what one moderate investment can buy your city in multiplied usefulness—in big-capacity versatility unlimited—in an International Drott 4-in-1. Prove what it means to have instantly available in one heavy-duty machine, under one operator's control, the full-sized performance of bulldozer, "carry-type scraper," Skid-Shovel, and clamshell. Compare the performance and long life protection of exclusive shock-swallowing Hydro-Spring. See your International Drott Distributor for a 4-in-1 demonstration!

International Harvester Company, Chicago 1, Illinois
Drott Manufacturing Corp., Milwaukee 15, Wisconsin

INTERNATIONAL® DROTT®

FREE CATALOGS

These Catalogs Will Help You

By checking over these listings you can secure without charge important up-to-date information on many of the problems which may be troubling your city.

Write directly to the address given or use the Post Card on the insert following page 52.

Water Supply Guidebook

482 This booklet will help local governments win active support of there citizens and citizen groups for the type of water supply needed by today's fast moving municipalities. It clearly describes courses of action that a community can take to make sure it has a safe, plentiful water supply—now and in the future. For a copy of "Water—Make Sure You'll Always Have Plenty!," write CAST IRON RESEARCH ASSOCIATION, 3440 PRUDENTIAL PLAZA, CHICAGO 1, ILL.

Tractor-Loaders, Attachments

483 A file-size reference folder with complete specifications on wheel and crawler tractors and matched equipment that speed handling multiple service assignments can be obtained free by municipal officials writing to J. I. CASE CO., DEPT. F1569, RACINE, WIS.

Rubber-Seated Butterfly Valves

484 *Bulletin* 750 explains why these valves give bubble-tight shut-off, shows why duck reinforced seat permits easy installation and assures long life, points out how design assures minimum turbulence and low pressure drop. For details on these, and other facts, write S. P. KINNEY ENGINEERS, INC., CARNEGIE, PA., for a copy of this bulletin.

Erases Traffic Lines

485 One-man operated Model "TR" shears off 4 to 10 feet of obsolete traffic marking per minute—on concrete or asphalt—without damaging street surface and at a cost of about 1c to 3c per foot. For descriptive literature, write G. H. TENNANT COMPANY, 765 N. LILAC DRIVE, MINNEAPOLIS 22, MINN.

New Fire Hydrants

486 *Bulletin* No. 591 introduces and describes the K-10 and K-11, fire hydrants new to the extensive line of valves, fire hydrants and indicator posts offered by KENNEDY VALVE MFG. CO., ELMIRA, N. Y. Both hydrants are made in sizes of 4, 4½ and 5 inches, with a wide variety of pipe connections available.

For Street Lamp Servicing

487 A new hydraulic aerial platform, truck chassis and special utility body have been designed as a package unit and specially engineered for use in globe cleaning and street lamp replacement. For descriptive literature on Series LST, Model "SL," write STRATO-TOWER DIVISION, YOUNG SPRING & WIRE CORP., P. O. BOX 103, ELKHART, IND.

All-Purpose Material Handler

488 Ten quickly interchangeable attachments make the 180° Speed Swing a versatile, highly maneuverable material handler that virtually eliminates the need for separate or extra equipment for special job operations. For full facts on how it can help you reduce equipment investment and maintenance costs, write PETTIBONE MULLIKEN CORP., 4700 W. DIVISION ST., CHICAGO 51, ILL.

New Source of Cast Iron Pipe

489 GRIFFIN WHEEL CO., has formed Griffin Pipe Division to manufacture and market at its Council Bluffs, Ia. foundry cast iron pressure pipe and products by the Delavaud process, in 4 to 12-inch diameter sizes and in 20-foot lengths. Pipe joints will include slip-on, mechanical joint, and bell and plain end. For product details, write the company at 445 N. SACRAMENTO BLVD., CHICAGO 12, ILL.

Cleans Sewers

490 Cleaning sewers the Truck-Loder way brings deposits from catch-basin to truck directly, eliminates dumping unsanitary sewer filth on streets, and frees one man from bucket dumping and shoveling. For other advantages and details of operation, write FLEXIBLE, INC., 3786 DURANGO AVE., LOS ANGELES 34, CALIF.

Cuts Trench at 2c a Foot

491 The 3-speed, 9.2-hp M-3 Ditch Witch trenches 1200-2400 feet per 8-hour day. It can dig in most soils and its telescoping boom and sectional chain easily adapt it for maximum performance on any job. For descriptive literature giving full details, write CHARLES MACHINE WORKS, INC., 603 BIRCH, PERRY, OKLA.

Plan for a "Garbage-Free" Community

492 An increasing number of cities, both large and small, are solving sanitation problems economically with a city-wide garbage disposer plan. For full details on the benefits, a list of participating communities, and sample city ordinances, write IN-SINK-ERATOR MFG. CO., RACINE, WIS.

Reflectorized Pavement Markings

493 If you would like information on low-cost reflective traffic beads that reduce nighttime traffic fatalities and have records of longer marking life, write CATAPHOTE CORP., TOLEDO 10, OHIO, manufacturers of a wide range of pavement marking material, traffic signs and street name signs.

Waste Baskets, Sandurns, Smokeurns

494 A wide variety of fireproof, steel waste baskets for indoor use that excel in style, strength and economy are described in literature from THE F. H. LAWSON CO., CINCINNATI 4, OHIO that also discusses sandurns and smokeurns available in deluxe and utility models.

Economic Water Filtration by Microstraining

495 Descriptive literature on this method of removing suspended matter from water stresses its low initial cost, high filtration efficiency, automatic and continuous operation under open gravity conditions, small head loss, eliminating of pumping. For complete details, operating data and test results, write GLENFIELD & KENNEDY, INC., 706 NORTH AVE., NEW ROCHELLE, N. Y.

Plastic Traffic Guides

496 These tough, rugged, durable plastic Hi-Way Cones are available in three sizes. Bright yellow and red colors are permanent; cone heads are adaptable for signs, flashers, flags; weighted reinforceed base gives added strength and stability. For details, write for illustrated circular to SERVICISED PRODUCTS CORP., 6051 W. 65TH ST., CHICAGO ILL.

Locates Pipe, Valves, Cables

497 This transistorized unit contains many features not found on other pipe locators that contribute to its sensitivity and ease of operation. For full details and specifications on Model 174, write GARDINER ELECTRONICS CO., DEPT. 27, 2545 E. INDIAN SCHOOL RD., PHOENIX, ARIZ.

Prefabricated Asphalt Linings for Tanks, Reservoirs

498 The experience of cities and industries in controlling seepage and erosion in reservoirs, irrigation ditches, salt water pits and industrial waterways with prefabricated asphalt linings are detailed in the 4th edition of an engineering brochure published by GULF SEAL CORP., DIV. OF BRAMBLE INDUSTRIES, MELROSE BLDG., HOUSTON 2, TEXAS.

How to Design a Parking Lot

499 Is the title of a new, well-illustrated book, published to help municipal officials layout parking lots that will accommodate the maximum number of cars with a minimum number of mishaps and to operate lots at lowest cost factor. To procure this valuable publication at a cost of $1, write WESTERN INDUSTRIES, INC., DEPT. 28, 2742 W. 36TH PLACE, CHICAGO 32, ILL.

Utility Truck Bodies

500 Latest data on a series of safe, comfortable utility truck bodies with roomy, functionally designed compartments, as well as hydraulic derricks and other equipment, are available from UTILITY BODY CO., 1530 WOOD ST., OAKLAND 7, CALIF.

Kills Unwanted Brush

501 This safe, nonvolatile spray kills brush and undesirable vegetation fast, completely. It is harmless to crops, and only double strength will kill grasses. For complete information on Fence Fire, write THE GLEDHILL ROAD MACHINERY CO., GALION, OHIO.

Water Works Pumps

502 *Bulletins* 1004 and 1005 furnish information on a dependable line of centrifugal pumps designed to maintain the vital water requirements of municipailties. Units ranging up to 100 million gallons per day are available to meet all water works needs. For copies, write DE LAVAL STEAM TURBINE CO., 866 NOTTINGHAM WAY, TRENTON 2, N. J.

(See page 46 for more Bulletins)

thrifty cities protect power budgets with SUPERIOR ENGINES

More and more cities with budget-conscious administrators are wisely specifying White Superior diesel or gas engines for water, sewage treatment and power plants. They find that both fuel and maintenance costs are reduced whenever these dependable, economical engine generator sets go to work as prime power, supplementary power or standby power.

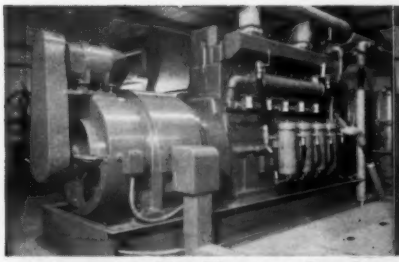
Singly or in multiples, compact, completely self-contained Superior power packages consistently produce high output for size. Diesels can operate continuously on non-premium fuel, while gas engines perform efficiently on natural, LP or free sewage gas. Because Superior has simplified engine construction to the highest degree possible—and uses only the most rugged, high quality parts—fewer replacements are required and maintenance is reduced to an absolute minimum.

White can custom-engineer Superior engines to your exact requirements and apply its extensive experience with automatic, unattended and remote control operations to your problem. If your requirements range from 215 to 2150 horsepower, or 150 to 1500 KW, call on White Superior engines to protect your power budget!

Superior ENGINES ATLAS Imperial DIESEL ENGINES White DIESEL

White Diesel

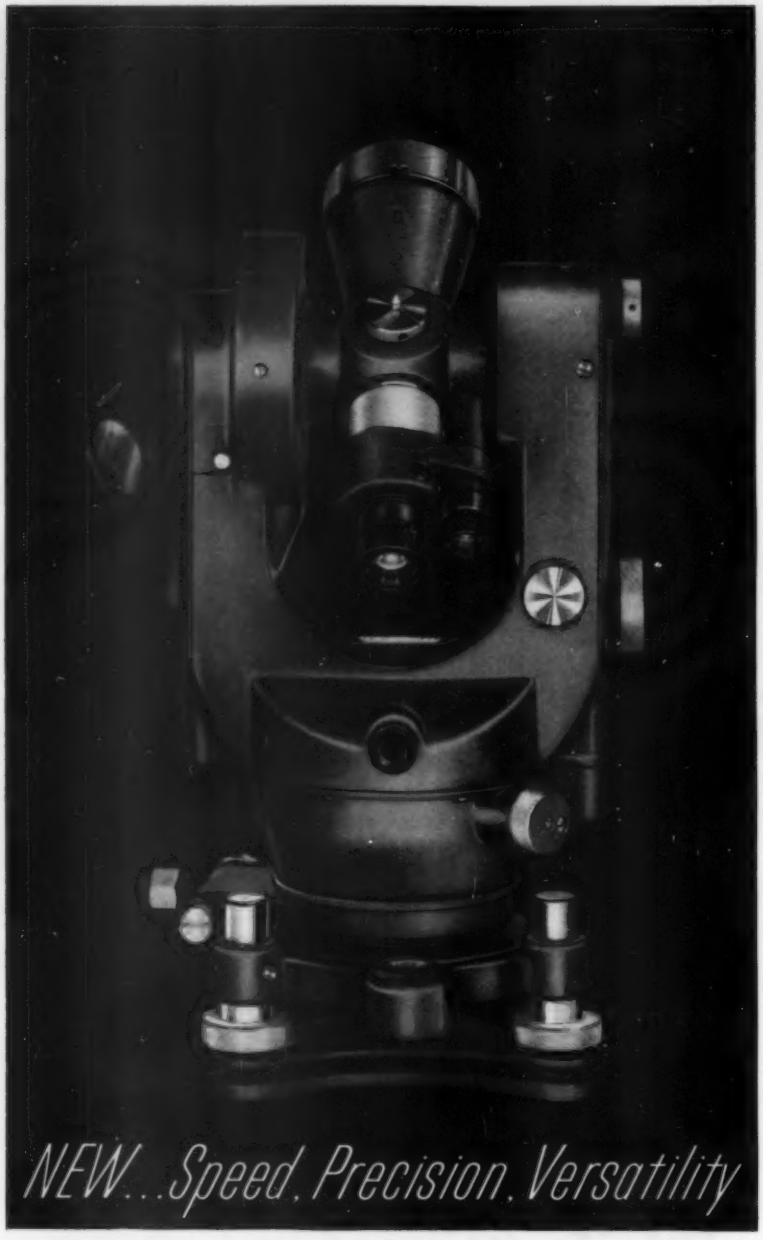
WHITE DIESEL ENGINE DIVISION, WHITE MOTOR COMPANY, Plant and General Offices, Springfield, Ohio



ALBUQUERQUE, NEW MEXICO . . . Superior 6G-825 gas engine generator set (250 KW) at Sewage Disposal Plant No. 1. Engine operates on sewage gas and/or natural gas.

LIMA, OHIO . . . Superior 40-SX-8 diesel engine generator set (500 KW) at city waterworks. Unit is on duty as standby power.

TUCSON, ARIZONA . . . Five Superior 80-GDSX-8 dual-fuel engine generator sets (each 1000 KW) at TRICO Electric Co-op Inc. County-wide power for farming and residential requirements.



WILD T-1A OPTICAL REPEATING TRANSIT

All the ruggedness, simplicity, and trouble-free performance of the world renowned T-1...plus the convenience and extra speed of automatic vertical collimation setting.

Vertical angles can be read immediately after set-up. No need to center vertical circle level...no cleaning or maintaining moving parts.

Highway, mining, or any other surveying project, day or underground, becomes routine with the Wild T-1A.

Upper and lower motions for setting on zero and for repeating. Built-in optical plummet.

Write for Wild Booklet T-1A.

WILD
HEERBRUGG
INSTRUMENTS, INC.
[illegible] • Fort Washington, N.Y. • FOrt Washington 7-4041
FULL FACTORY SERVICES

In Canada: Wild of Canada Ltd., 157 Maclaren St., Ottawa, Ontario

MONEY SAVING *catalogs*

Write directly to the address given or use the Post Card on the insert following pg. 52

Folder On Rigid Plastic Pipe

503 In presenting the advantages of ABS pipe for potable water systems, irrigation and sprinkler systems industrial piping and domestic gas systems, this new folder lists ten benefits found only in pipe extruded of ABS. For a copy of "Be ABSolutely Sure with ABS Plastics," write MARBON CHEMICAL DIVISION, P. O. BOX 68, WASHINGTON, W. VA.

Vibratory Compactors Produce Better Streets

504 These self-propelled vibratory tampers compact crushed stone, gravel, sand, etc., produce uniform densities at greater depth. The CM-15 with 2300-pound impact force compacts lifts up to 12 inches; CM-20 penetrates up to 30 inches, has impact force of 6000 pounds. For descriptive literature on these one-man operated Terrapacs, write VIBRO-PLUS PRODUCTS, INC., STANHOPE, N. J.

Emergency Barricade

505 Police, fire and highway departments will find Guard-Gate a practical emergency barricade. It stands 3 feet high and extends to 8 feet, yet can be stored in 9 inches of space. Attention-getting yellow crossbars and red warning flags direct pedestrians and motorists. Descriptive literature can be obtained from WEST SIDE IRON WORKS INC., 327 FRONT AVE. N. W., GRAND RAPIDS 4, MICH.

Mowing Tractor Features Variable Gang Cutting Capacity

506 Literature just received from WORTHINGTON MOWER CO., STROUDSBURG, PA., announces the Wing Lift, a front-wheel drive, rear-wheel steer Model F tractor with a variable-capacity gang mower control that permits cutting swath to be altered hydraulically from 6'10" (3 gang) to 15½ feet (full 7 gang).

Safe, Imaginative Playground Equipment

507 A four-color catalog of appealing, imaginative playground equipment —Jack 'N Jill, Merry Flyer, Earn-A-Slide—and standard tot lot items—swings, see-saws, slides—has just been published and is available free from MIRACLE EQUIPMENT CO., GRINNELL, IA.

Help with Ice and Snow Removal

508 Valuable information on ice and snow removal is available in book form without charge from MORTON SALT CO., INDUSTRIAL DIVISION, DEPT. AC-7, 120 S. LASALLE ST., CHICAGO 9, ILL., producers of nontoxic rock salt that melts ice and snow without leaving messy residue on streets and needs no flushing after thaw.

Swimming Pool Equipment Catalog

509 A comprehensive and complete Pool Catalog & Data Book illustrates, diagrams and describes over 250 swimming pool products. Pool layouts show all necessary equipment installations; the "Pool Care" section gives many valuable hints on pool operation and maintenance. For your free copy of this 48-page catalog, write MODERN SWIMMING POOL CO., 1 HOLLAND AVE., WHITE PLAINS, N. Y.

(See page 48 for more Bulletins)

FLASH...

450 MORE DODGE PURSUITS JOIN CALIFORNIA HIGHWAY PATROL

LARGEST SINGLE ORDER IN STATE'S HISTORY GOES TO DODGE

Each year, in November, the California Highway Patrol holds a series of competitive tests to select their patrol cars for the coming year. As a result of those tests, Dodge was awarded an order for 331 rugged 1959 D-500 Police Pursuits. Now, after six months of driving and testing these cars in the field, this crack law-enforcement agency orders 450 more.

Today you'll find more Dodge Pursuits in service with the California Highway Patrol than all other makes combined. And the percentage grows larger every day.

Why? Because in the experience of the California Highway Patrol, no other car made does so many things so well, lasts so long, or costs so little to maintain as the staunch 1959 Dodge Pursuit.

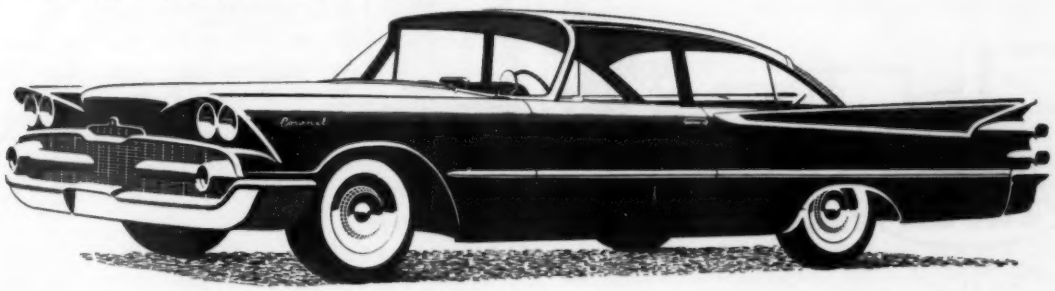
Here is solid proof of Dodge dependability and superiority. Proof clearly established in the competitive tests the California Highway Patrol holds every year. Proof dramatically substantiated in thousands of miles of rugged daily service.

On the test track and on the road, the California Highway Patrol has found, "It Pays to Own a Dodge."

Next time you specify cars for your force, be sure you get what you need. Test, compare the capable Dodge Pursuit; the car that's specially built from the ground up to meet the tough demands of police operation. For a demonstration at your convenience, see your local Dodge dealer or write: Dodge Division, Chrysler Corporation, Box 1259, Detroit, Michigan.

'59 DODGE PURSUITS

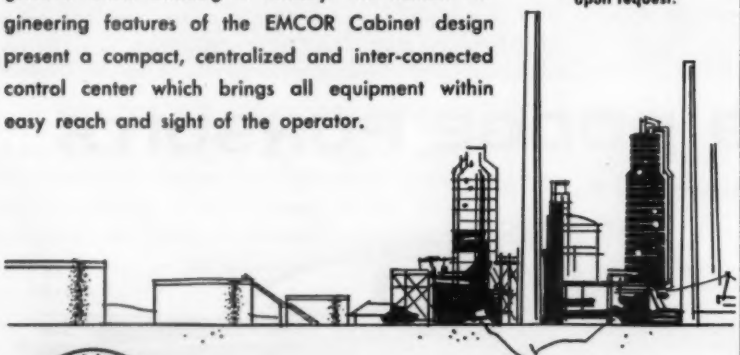
Designed, Built and Powered for Police Work



EMCOR®* STANDARD
CABINETS HOUSE OIL COMPANY PIPELINE COMMUNICATIONS CONTROL CENTER

A new microwave communications system meets the demanding requirements of keeping oil moving along a cross-country pipeline 24 hours a day for the Ohio Oil Company, Findlay, Ohio. Voice control and supervisory channels plus selective telemetering of pipeline operations are handled from a control center housed in EMCOR Modular Enclosures in the general office building in Findlay. The human engineering features of the EMCOR Cabinet design present a compact, centralized and inter-connected control center which brings all equipment within easy reach and sight of the operator.

Your copy of Catalog 106 available upon request.



QUALITY EMCOR PRODUCTS

Originators of the Modular Enclosure System

ELGIN METALFORMERS CORP.

630 CONGDON, DEPT. 1233 • ELGIN, ILLINOIS

*Registered Trademark of Elgin Metalformers Corporation

FREE catalogs

Write directly to the address given or use the Post Card on the insert following pg. 52

Dig and Dump with Speed

510 The three new wheel tractors recently introduced by THE OLIVER CORP., INDUSTRIAL DIVISION, 19300 EUCLID AVE., CLEVELAND 17, OHIO, make this possible. Models 550, 770 and 800 mount backhoe and loader attachments, are designed for mobility economy of operation, and to step up job production. For descriptive literature, write the company.

Emergency Electric Plants

511 Rpm indicator, automatic spark advance, pushbutton start, remote control are features of PM emergency electric plants that contribute to efficiency and economical operation. To learn of others, and for complete information, write PACIFIC MERCURY, 14052 BURBANK BLVD., VAN NUYS, CALIF.

Cleans Sewer Drains and Pipe

512 More power, more speed, more adaptable—is a succinct description of the new "Mainliner" rodding machine, applicable for all-around use, from high-speed threading to cutting through heavy obstructions. A 4-page brochure gives full details on this efficient sewer drain and pipe cleaning tool. Write ROTO ROOTER CORP., DES MOINES 14, IA.

Keeps Swimming Pools Algae-Free

513 This algae-killing chemical not only keeps swimming pools free of unsightly, slippery algae, but keeps water, walls and walkways clean and clear. Formulations based on it prove excellent disinfectants for locker rooms and swimming gear. For full story, write ROHM & HAAS CO., WASHINGTON SQUARE, PHILADELPHIA 5, PA.

Magnetic Drive Water Meters

514 Powerful magnetic drive, hermetically sealed register, absence of stuffing box, only two moving parts in water—unique construction features of Sealed Register water meters that contribute longer operative life and reduce vulnerability to wear. For descriptive literature, write ROCKWELL MFG. CO., PITTSBURGH 8, PA.

Water Meters

515 Frostproof, split case, heavy-duty disc; compound or turbine—Watch Dog water meters register water use accurately. For complete information, write GAMON METER DIVISION, WORTHINGTON CORP., NEWARK, N. J.

Mosquito Control, Tree Care

516 By making a letterhead request, you can obtain valuable facts on mosquito control and Dutch elm disease control from JOHN BEAN DIVISION OF FOOD MACHINERY AND CHEMICAL CORP., LANSING 4, MICH., manufacturers of Rotomist sprayers for fly, mosquito and shade tree spraying.

Open Flooring for Municipal Plants

517 Advantages of open flooring and gratings for public works applications, sidewalks and sewage treatment plants are featured in 24-page *Bulletin* No. 2527-R, available from GRATING DEPT., BLAW-KNOX CO., BLAWKNOX P. O. BOX 1198, PITTSBURGH 30, PA. Types and spacing, bearing bar surfaces and weights, fastening methods, and safe loads for electroforged carbon steel and aluminum interlock grating are included.

(See page 50 for more Bulletins)

BADGER'S COMPOUND WATER METER ASSURES FULL REVENUE FOR ALL WATER DELIVERED

Wherever water flow rates fluctuate considerably during the day — in schools, factories, hotels, theaters, apartment houses, dairies, laundries — Badger's compound meter assures economical, efficient service.

This compound meter combines Badger's disc and turbine meters to provide accurate registration at all rates of flow. You get the full revenue to which your water department is entitled for water actually delivered.

It is the industry's only compound meter where only one side operates at a time. A patented balanced compounding valve directs small streams through the disc meter, large streams through the turbine side... for accurate measurement of all rates of flow, less wear and longer service life.

Write for complete details now.

Badger Water Meters

BADGER METER MFG. CO. • 4545 W. Brown Deer Rd. • Milwaukee 18, Wisconsin • *Offices in principal cities*

Revenue from parking meters depends to a large extent on how much it costs to keep them operating efficiently. Meters with comparatively few moving parts are usually less costly to keep in operation. Such a meter is the MI-CO Manual.

It's a well-known fact that MI-CO Manuals earn more because they are seldom out of order. And should one need attention, the mechanism is so simple and accessible, the adjustment can be made in a few minutes at the meter location. This quick servicing feature means more revenue because there is less down-time.

MI-CO Manuals may be set for any number of hours on various coin combinations, and one coin slot takes all coins from a penny to a quarter. Construction is unusually rugged, and their reliability has been proved in hundreds of installations.

If you are considering a new installation, replacing less efficient meters, or adding to your present setup, MI-CO has much to offer in lower first cost, lower maintenance, and consistently higher earnings over longer periods of time.

We'll be glad to send complete information together with earning and upkeep records of many installations. Also details about the MI-CO Security Collection System . . . the most efficient method yet devised for collecting parking meter coins.

M ABC *A Symbol of High Quality*

MI-CO PARKING METERS, P. O. BOX 668-EN, COVINGTON, KENTUCKY

(The Michaels Art Bronze Co., Inc.)

OTHER MICHAELS PRODUCTS: Architectural Metal • Curtain Walls
Display Cases • Reversible Windows • Tablets • Memorials • Signs

FREE catalogs

Write directly to the address given or use the Post Card on the insert following pg. 52

Movie on Refuse Collection

518 This professionally made movie in color and sound describes the Roto-Pac refuse collection truck and its method of operation. This film is available to interested municipal authorities and private refuse collectors. Requests for use of the film should be addressed to PROMOTION DEPT., CITY TANK CORP., 53-09 97th PLACE, CORONA, N. Y.

Prestressed Concrete Swimming Pools

519 These trouble-free installations are assembled quickly and at lower cost with prestressed interlocking concrete units that form a triple wall capable of withstanding extreme temperatures and other stresses. For descriptive literature, and a catalog on service and equipment for swimming pools, write NATIONAL POOL EQUIPMENT CO., P. O. BOX 1101, INDIANAPOLIS, IND.

Ends Filter Fly Problems In Sewage Treatment Plants

520 Safely and economically, Psycon achieves nearly 100% kill of larvae, and pupae, as well as adult filter flies, that cause so much trouble in trickling filters. It is harmless to algae and bacteria, and does not adversely affect snails and BOD. For descriptive literature, write NATIONAL DISINFECTANT CO., 2417 COMMERCE, DALLAS, TEXAS.

Prestressed Concrete Water Tanks

521 *Bulletin* T-22 straightforwardly presents the long and short term economies derived from this type of water storage facility. For a copy, write THE PRELOAD CO., INC., 211 E. 37TH ST., NEW YORK 16, N. Y.

Trouble-Free Butterfly Valves

522 These rubber-seated butterfly valves assure ease of operation, longer life, low maintenance and greater net flow area. They are described in illustrated literature that can be obtained from PELTON DIVISION, BALDWIN-LIMA-HAMILTON, 2929 NINETEENTH ST., SAN FRANCISCO 10, CALIF., manufacturers of a wide range of reliable equipment for water works use.

Reduce Car Costs

523 If you are interested in a way to reduce the cost of operating municipal and departmental car fleets, write FLEET SALES, AMERICAN MOTORS CORP., 14250 PLYMOUTH RD., DETROIT 32, MICH.; request information on the Rambler Fleet Plan.

Mechanized Municipal Accounting

524 Want to update your municipal accounting system? Work with fresh figure-facts? Simplify procedure yet retain iron-clad control of all operations? Then say Sensimatic to BURROUGHS CORP., BURROUGHS DIVISION, DETROIT 32, MICH.

Reconditions Water Pipe in Place

525 The Centriline Process successfully and smoothly lines piping 4" to 144" in diameter in place with cement-mortar, creating a pipe within a pipe. It increases carrying capacity, stops leakage, prevents corrosion and tuberculation, prolongs pipe life. For details, write CENTRILINE CORP., 140 CEDAR ST., NEW YORK 6, N. Y.

(See page 51 for more Bulletins)

FREE catalogs

Write directly to the address given or use the Post Card on the insert following pg. 52

Steel and Aluminum Lighting Standards

526 Octagon-shape steel and aluminum lighting standards that offer increased resistance to bending and corrosion, superior strength, heavier wall thickness and drop forged steel anchor base are the subject of catalogs available from KERRIGAN IRON WORKS, INC., WELDFORGED LIGHTING STANDARD DIV., DEPT. A-7, NASHVILLE, TENN.

High Compaction

527 "The Big Squeeze" reviews the high-compaction Hydro E-Z Pack garbage and trash body. Cutaway drawings explain its specially designed compacting unit, which produces 76,000 pounds of compaction force. Safety of operation and loading, dumping ease and time saving, versatility and overall economy features are discussed. For a copy, write HERCULES GALION PRODUCTS, INC., DEPT EZ, GALION, OHIO.

Heavy-Duty Loaders and Backhoes

528 New 16-page *Catalog* CR-1076-I graphically describes how International Wagner loaders and backhoes are matched with International 240, 340, 460 and 560 Utility tractors to fit exact job needs. For a copy, write INTERNATIONAL HARVESTER CO., CONSUMER RELATIONS DEPT., 180 N. MICHIGAN AVE., CHICAGO 1, ILL.

Rotary Air Compressor

529 *Catalog* JCR8 points out that this machine operates at slower running speed (1700 rpm @ full load), consumes less fuel, holds pressure constant. Air is said to be 100° cooler than with old-type compressors; operation is smooth, quiet, simple. For a copy of this catalog, write THE JAEGER MACHINE CO., 505 DUBLIN AVE., COLUMBUS 16, OHIO.

Edges Curbs Clean

530 Turf-trimming curbs or sidewalks with the Kurb-Dresser can be done in dry or wet weather. The unit edges 80 miles per day at tractor speeds and can slice through a 4" soil build-up as easily as it trims random grass runners. Blade automatically holds a steady course if tractor path deviates. For literature, write KD MFG. CO., CLEBURNE, TEXAS.

Portable Electric Plants

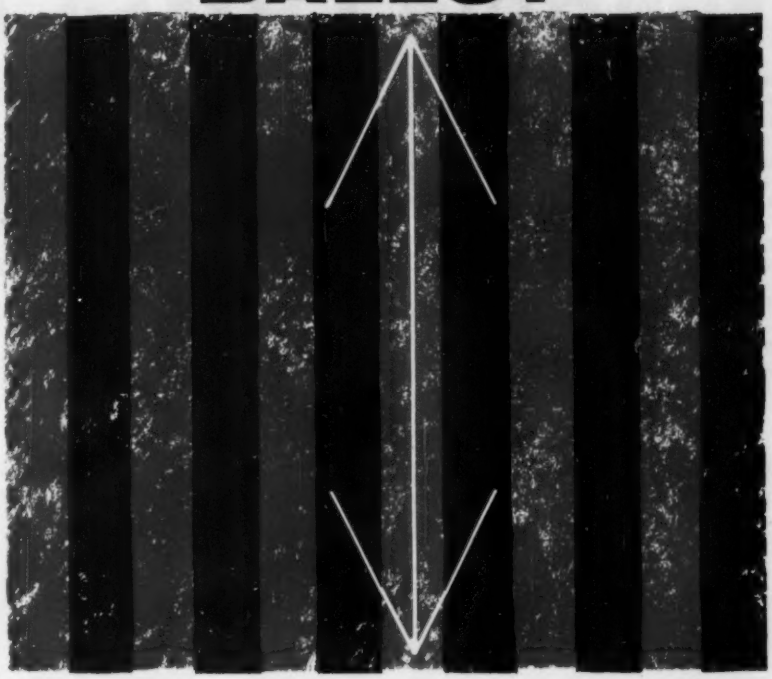
531 Work is accomplished more quickly when these portable electric plants are on the job. They are easy to move to where needed for power tools, floodlights, on street and park maintenance jobs. *Folder* E-44 fully describes these and other electric plants up to 100kw that are suitable for police communications, treatment and filtration plants. For a copy, write KOHLER CO., KOHLER, WIS.

New Arrow Indicator—Better Traffic Signal

532 Distortion of image, phantom effect at point of arrow, distortion of light through lens—inefficiencies of convex-concave type lenses—are said to be virtually eliminated by this newly developed, flat-faced lens. For descriptive literature giving full facts on why this arrow lens provides more uniform illumination, write SOUTHERN SIGNALS, INC., 222 BEACH ST., SHREVEPORT. LA.

(See page 54 for more Bulletins)

VERTICAL TYPE BALLOT

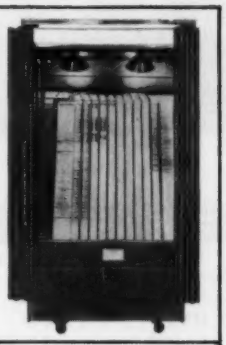


for better elections

The face of the Shoup Voting Machine is arranged in party columns and office spaces conforming to the familiar vertical pattern of the Australian Ballot, thereby making it the easiest machine to use. This means, the voter has no difficulty even if it is his first experience with voting machines. It also means equal advantage to all candidates for a particular office, since the preferred "first row" positions which have so often distorted election returns are completely eliminated.

Shoup Voting Machines have 9 columns for listing candidates and 1 column for propositions to be voted on, and are available with 50, 40, or 30 rows. This maximum flexibility plus the capacity to carry up to 500 candidates, means that Shoup machines can be adapted easily for all types of elections, including primaries.

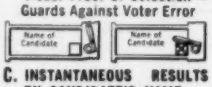
Shoup Voting Machines are designed to fill every ballot requirement and comply with the election laws of all states. They are the only voting machines that duplicate the traditional vertical paper ballot with which voters are familiar. They are fool-proof and fraud-proof, reduce voting costs, and insure greater speed and accuracy of results. Impartial surveys prove the Shoup Voting Machine superior . . . more perfectly designed and constructed to meet the requirements of the voting public. That's why more and more communities, from the smallest to the largest, are using Shoup Voting Machines for better elections.



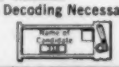
The ABC's of Superiority...

A. THE VERTICAL TYPE BALLOT (see illustration)

B. THE MOVING X MARK — Visual Proof of Selection — Guards Against Voter Error



C. INSTANTANEOUS RESULTS BY CANDIDATE'S NAME Directly on the Face of the Machine No Decoding Necessary



28 States Already Use Shoup Voting Machines

SHOUP

THE SHOUP VOTING MACHINE CORPORATION

EXECUTIVE OFFICES: 41 E. 42nd St., New York 17, N.Y. • SALES OFFICES: 1701 West End Ave., Nashville 3, Tenn.

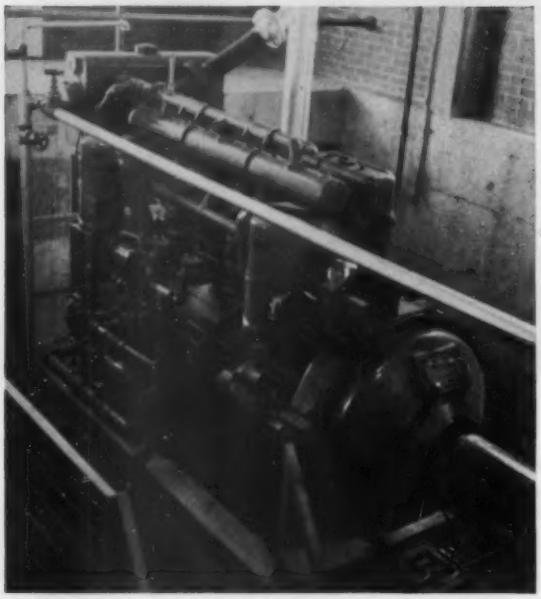
the voting machine that looks like a ballot

ROILINE ENGINES (Formerly LE ROI)

* The trade mark LE ROI is used under license from Westinghouse Airbrake Co., the trade mark owner.

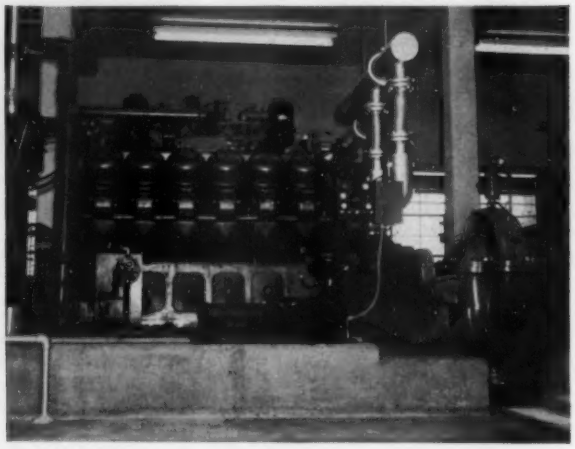
POWER FOR MUNICIPAL PLANTS

Three ROILINES pull the pumps at Oklahoma City's Lake Hefner Municipal Filtration Plant.



Model F-1500, maximum horsepower 215 at 1200 rpm on natural gas.

Model L-3460, maximum horsepower 595 at 1350 rpm on natural gas.



BASIC ENGINE CHARACTERISTICS*

GASOLINE OR NATURAL GAS					600	800	1000	1200	1400	1600	1800	2000	2200	2400
MODEL	Bore & S.	Cyls.	Displ.	Torque–rpm	BRAKE HORSEPOWER AT ENGINE SPEEDS INDICATED									
H540	4½ x 4¼	8	540	430- 900	...	64	82	99	115	130	143	155	164	170
H844	5¼ x 4⅞	8	844	637-1500	...	106	135	165	191	215	237	255	270	278
F1500	6¾ x 7	6	1503	1090- 650	125	165	200	215						
H2000	6¾ x 7	8	2004	1485- 650	170	225	270	290						
L3000	6¾ x 7	12	3006	2200- 650	250	335	405	435						
L3460	7¼ x 7	12	3468	2570- 900	285	391	492	568	595 @ 1350 RPM					
L4000	7.54 x 7.5	12	4000	2930- 900	325	446	560	645						

*With oil pump, water pump, magneto, air cleaner, carburetor, and exhaust muffler. Hp shown is maximum.

SEE YOUR ROILINE ENGINE DISTRIBUTOR

ARIZONA, Casa Grande, Engine Service Company, Inc.
ARKANSAS, Paragould, Wonder State Manufacturing Co.
CALIFORNIA, Long Beach, Engine & Equipment Company
COLORADO, Denver, Emrick & Hill Engine & Equipt. Co.
ILLINOIS, Centralia, John Nickell Company
KANSAS, Garden City, Carson Machine & Supply Co.
LOUISIANA, Shreveport, Ingersoll Corporation
New Orleans, Southern Engine & Pump Co.
MICHIGAN, Reed City, Hafer Engine Company
OHIO, Columbus 19, Cantwell Machinery Company
OKLAHOMA, Chickasha, Chickasha Gin & Mill Supplies
Oklahoma City 9, Carson Machine & Supply Co.
PENNSYLVANIA, Pittsburgh 34, P. C. McKenzie Company
TEXAS, Houston 1, Southern Engine & Pump Co. (also in Beaumont, Corpus Christi, Dallas, Edinburg, Kilgore, San Antonio)
Lubbock, Farmers Supply Company
Odessa, General Machine & Supply Inc.
Wichita Falls, Nortex Engine & Equipment Co.
WYOMING, Casper, Emrick & Hill Engine & Equipt. Co.

424-R

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN / New York • Tulsa • Los Angeles
Factories: Waukesha, Wisconsin and Clinton, Iowa

Again it's Roberts Filter

Engineers-Architects: J. N. Pease and Company
General Contractors: Rea Construction Company
Supt., Water Department—Walter M. Franklin

at Charlotte, North Carolina

For the fourth time, "the Queen City of the South" has expanded its water purification facilities, and on each occasion it has been "Mechanical equipment by Roberts Filter."

The initial stage of this latest new project, the Hoskins Water Purification Plant and Pumping Station, has a capacity of 12,000,000 gpd with a projected total of 72,000,000 gpd in the future.

This beautiful new plant is a tangible measure of farsightedness and preparation for future growth. Roberts Filter is proud of its record over the years at Charlotte—as in so many other municipalities.

the nameplate of dependability

MECHANICAL EQUIPMENT
BY
ROBERTS FILTER MFG. CO.
DARBY, PENNA.

UTILITY BODY OAKLAND

SERIES CC
CREW COMPARTMENT BODIES

Utility Body Company's Series CC Line Construction Body provides the ultimate in safety, comfort and warmth for your line crew. This body is unparalleled for its straight line modern design and provides clean and completely protected transportation facilities. Every inch of space is utilized for greater efficiency. Your line crews have absolute assurance that this Body, its compartment layouts, as well as complementary hydraulic derricks and other equipment represent the most effective tools of their nature on the market today.

COMPLETE LINE

The complete Utility Body Line is a sign of progress...matching perfect quality with functional design. With the know-how to meet and fulfill each and every customer's specific requirements...UTILITY BODY COMPANY has engineering and plant capacity to expedite immediate delivery of all special and standard units.

There IS a UTILITY BODY to fulfill YOUR OWN Specific Requirements!!! Contact UTILITY BODY COMPANY for data on the SERIES CC CREW CAB LINE BODIES or telephone your nearest distributor for complete information on UTILITY BODIES.

MODEL UED-2 DERRICK 26' to 30' 6" HEIGHT

MODEL CC-147C BODY

UTILITY BODY CO.
1530 WOOD STREET
OAKLAND 7, CALIFORNIA
TWinoaks 3-8980

CATALOGS *for Improved Municipal Services*

Write directly to the address given or use the Post Card on the insert following pg. 52

Low-Cost Concrete Lighting Standards

533 By combining the qualities of prestressing with up-to-date design, these standards offer maximum strength, durability and trim appearance with economy. For further information, drawings and specifications on 800 Series Stress-Spun Hy-Lite concrete lighting standards, write AMERICAN CONCRETE CORP., 5092 N. KIMBERLY AVE., CHICAGO 30, ILL.

Improved Backhoe

534 Several new features have been incorporated in the design of the new Shawnee "88" backhoe; all contribute to its improved operation. Digging depth is 12 feet; dumping height, 9 feet 9 inches; reach, 17 feet; swing 188°. For full information, write SHAWNEE MFG. CO., INC., 1947 N. TOPEKA AVE., TOPEKA, KANS.

Combats Odors

535 Whatever objectionable odors prevail—at the sewage disposal plant, incinerator plant, manholes, lift stations, dumps—Sanfax DX-85 can be used to combat them effectively and efficiently. For details on this sound odor control product, write THE SANFAX COMPANY, P. O. BOX 604, ATLANTA, GA.

Discusses Coagulation

536 Thirty-eight pages of valuable information on all phases of coagulation for water and sewage treatment have been packed into a booklet published by TENNESSEE CORP., 617-629 GRANT BLDG., ATLANTA, GA., producers of Ferri-Floc, a free-flowing granular salt that can be fed with few modifications through any standard dry feed equipment.

Pump Strainers for Municipal Use

537 Full information on pump strainers designed in many sizes, from almost any metal and for nearly every municipal application is given in *Bulletin* 905, which can be obtained from STRATA-FLO PRODUCTS, INC., FORT WAYNE, IND.

Photoelectric Street Lighting Controls

538 Complete data on up-to-date, low-maintenance photoelectric controls for street lighting applications can be obtained from SUN SWITCH DIVISION, RIPLEY COMPANY, INC., MIDDLETOWN, CONN.

Solves Municipal Water Problems

539 GRAVER WATER CONDITIONING CO., 216 W. 14TH ST., NEW YORK 11, N. Y., is equipped to handle all municipal water treatment problems. Its equipment and processes are geared to meet the needs of both the small and large community. For descriptive literature, address requests to the MUNICIPAL DEPT.—M413.

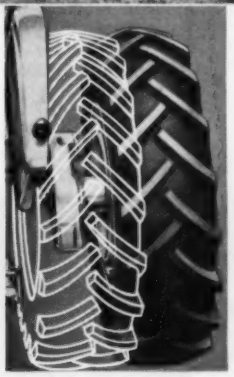
Sucks in Leaves and Litter

540 Fact-filled literature, available from GOOD ROADS MACHINERY CORP., MINERVA, OHIO, discusses the Leaf Collector, a maneuverable, vacuum cleaner-like unit with flexible hose that quickly draws in wet or dry leaves and litter from streets into its 14-cubic yard self-dumping hopper.

(See page 57 for more Bulletins)

Power-adjustable wheel treads

Turning the steering wheel slides the Roll-Shift front axle in or out.



Engine power moves the rear wheels in or out.

Both are Allis-Chalmers "firsts."

D-14 43-hp, 4,200-lb weight
D-17 63-hp, 5,300-lb weight

SOLD BY ALLIS-CHALMERS DEALERS EVERYWHERE

FIT THE TRACTOR TO THE JOB!

Take a close look at the many applications of wheel tractors to learn the real value of adjustable wheel tread . . . front and rear.

Pull wheels in for working in tight, cramped quarters, ditching or shaping a grade. Adjust one side—or both—narrow the over-all width by 20 inches.

Spread wheels out for mowing up to 2:1 slopes. With wheels spread out, and low center of gravity, there's ground-hugging stability. Wide spacing provides extra width for straddling trenches, too!

Wheel spacing is changed quickly and safely . . . no need for blocks or jacks. Set desired tread width in minutes . . . without backbreaking labor. Adjustable front and rear wheels are standard equipment on Allis-Chalmers D-14 and D-17 utility tractors.

Get the complete story on Power-Shift wheels, Roll-Shift adjustable front axle and other Allis-Chalmers tractor features from the dealer near you. He'll arrange a demonstration . . . any day you say.

ALLIS-CHALMERS

IT DOESN'T COST TO FIND OUT

ALLIS-CHALMERS MFG. CO.
Utility Tractors and Equipment
Milwaukee 1, Wisconsin

Gentlemen:

Show me more about the new design Allis-Chalmers utility tractors and equipment.

☐ I'd like Literature ☐ A Salesman's Call
☐ A Job Demonstration

Name_____

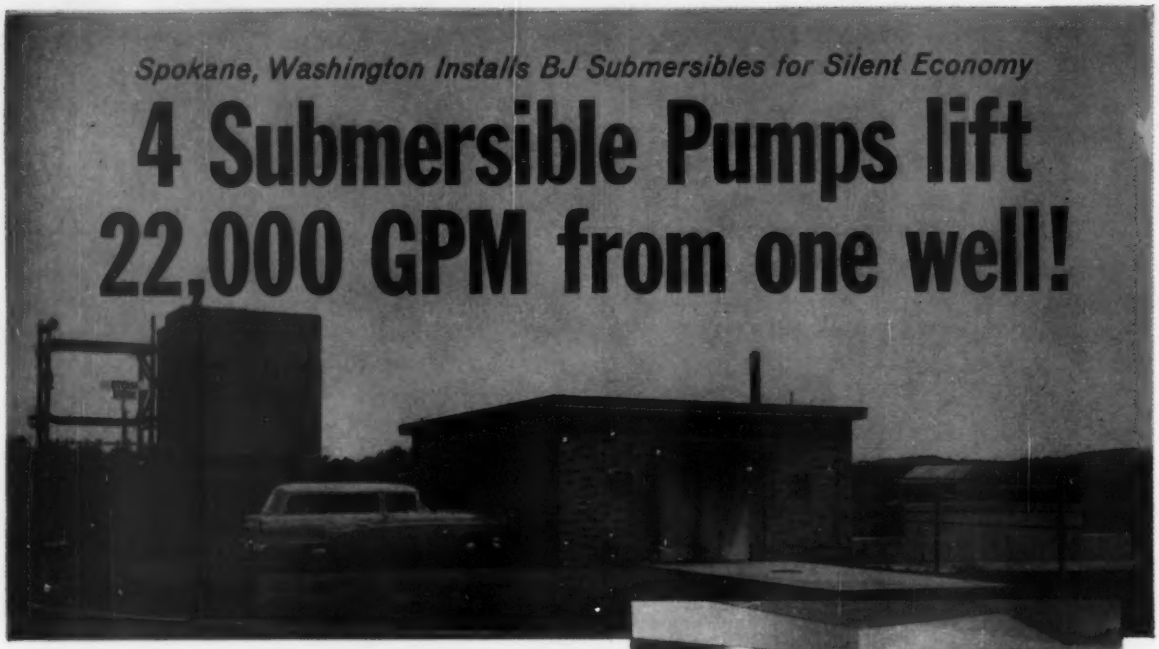
Firm_____

Address_____

City_____ State_____

Spokane, Washington Installs BJ Submersibles for Silent Economy

4 Submersible Pumps lift 22,000 GPM from one well!



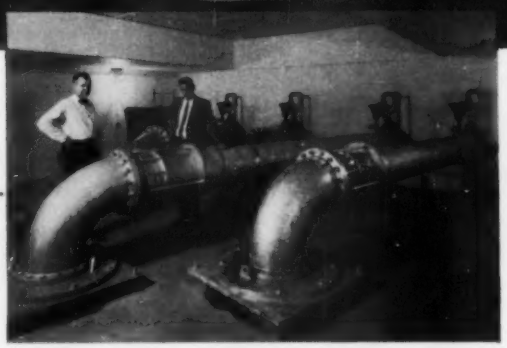
THE NEW AND THE OLD. New Nevada Street Pumping Station houses chlorinators and electric starting equipment only. Rest of installation is underground. Contrast this with size of conventional old-type surface pump house in background.

Spokane's new Nevada Street Pumping Station is another tribute to the "silent economy" of BJ Submersibles. Four 24", 2-stage Submersibles with their close-coupled 400 HP motors work noiselessly in a single well (18 ft. diameter) far below the surface, each pumping 5500 GPM against a head of 249 feet. With all four pumps in operation, the Station can deliver more than 22,000 GPM or 32,000,000 GPD—sufficient to supply a population of 211,000!

By installing four submersibles in one well, the city realized a substantial savings in building costs. Conventional surface pumping installations require extra space and heavy-type construction to support the permanent lifting crane and other equipment. The Nevada Street installation is completely underground, except for one small, inexpensive structure that houses the chlorinators and starting equipment.

The BJ Submersibles operate automatically, with no lubrication and a bare minimum of maintenance. They require no expensive air-conditioning and filtering equipment to remove heat and dirt from the ventilating air—resulting in further economies to the city. Noiseless operation permits location of a submersible pumping station close to the load center. In this installation an estimated 20 feet of head is saved on all water pumped—a saving of $92.00 on each pump during a 500-hour run!

The pumps which were used to develop this high capacity well since have proved themselves under all conditions.



Discharge elbows for 4 submersible pumps. Check valves and flow meters are located just beyond far wall. Entire discharge installation is underground.

Modern starting equipment, located in Pumping Station building. George Oslund, assistant Municipal Utility Supervising Engineer of the City of Spokane, presses "start" button for Pumping Unit No. 1.

Glen A. Yake is Supervising Engineer for all municipal utilities of the City of Spokane. The Spokane Municipal Water Department has earned a reputation as one of the Nation's most progressive.

Write Today for Full, Profitable Details.

BJ

Since 1872

Byron Jackson Pumps

INCORPORATED

A SUBSIDIARY OF BORG-WARNER CORPORATION

P.O. Box 2017A, Terminal Annex, Los Angeles 54, California

P.O. Box 70, Lawrenceburg, Indiana

FREE catalogs

Write directly to the address given or use the Post Card on the insert following pg. 52

New Fire Ordinance

541 Quincy, Mass., recently became the first municipality to pass an ordinance requiring that all new residential and institutional construction have fire detection and alarm facilities within its confines. For a copy of this ordinance, write GAMEWELL CO., DEPT. 3B, UPPER NEWTON FALLS 64, MASS., manufacturer of reliable fire alarm equipment and other signalling systems.

Water Meters

542 Information on water meters for all types of municipal services can be readily obtained by writing to one of the leading manufacturers of these registers, HERSEY MANUFACTURING CO., DEDHAM, MASS.

Packs In More Refuse Per Trip

543 Hobbs Hydepak refuse collection bodies are said to have 3 yards more compressible capacity inside their main storage compartments than other refuse packers of comparable weight and cost. This means fewer trips to the disposal site, more economical refuse collection. For literature, write HYDEPAK DIV., HOBBS TRAILERS, 609 N. MAIN, FORT WORTH, TEXAS.

Versatile Tractor Shovel

544 The numerous abilities of this rubber-tire unit is clearly pointed out in "No. 1 in Public Service," which shows how the "Payloader" through use of a wide assortment of attachments becomes a "specialist" at many municipal jobs. For a copy of this catalog, write THE FRANK G. HOUGH CO., 710 SUNNYSIDE AVE., LIBERTYVILLE, ILL.

For Higher Pumping Efficiency

545 Featured in *Bulletin* 5440A are bladeless-impeller non-clog pumps, ideal for pumping unscreened liquids with large solids in suspension. To learn how these new units can help you achieve higher pumping efficiency, write FAIRBANKS, MORSE & CO., 600 S. MICHIGAN AVE., CHICAGO 5, ILL.

Sewage Lift Stations

546 Literature on a complete line of sewage lift stations designed to operate reliably in any sewage collection situation can be obtained without charge from YEOMANS, 2000-3 N. RUBY ST., MELROSE PARK, ILL., which builds equipment for lifting sewage that ranges in size from small ejectors to large pumping stations.

Aluminum Lighting Standards

547 If you desire up-to-date information on a completely reliable line of aluminum lighting brackets and standards that offer both long and short term economies as well as pleasing appearance, request literature on HAPCO standards from ALUMINUM PRODUCTS CO., DIVISION OF HUBBARD AND CO., 6301 BUTLER ST., PITTSBURGH 1, PA.

Improved Line of Power Graders

548 The new and expanded Austin-Western grader line now offers 6-wheel Supers and 4-wheel Pacers in 100, 200 and 300 Series, with power ranges from 106 to 120 hp and in weight classes from 16,000 to 22,850 pounds. For descriptive literature, write AUSTIN-WESTERN, CONSTRUCTION EQUIPMENT DIVISION OF BALDWIN-LIMA-HAMILTON, AURORA, ILL.

Surge Relief, Surge Arrestor Valves

549 Technical bulletins W2A and W16 respectively characterize a *cushioned* surge relief valve that opens immediately when water line pressure reaches pilot setting and a surge arrestor valve that anticipates surge and opens on subnormal pressure to prevent surge. For copies, write GOLDEN ANDERSON VALVE SPECIALTY CO., 1200 RIDGE AVE., PITTSBURGH 33, PA.

Sanitary Washfountains

550 These treadle-operated facilities are designed for use in schools, institutions, public buildings. They are available in three heights—31", 29", 27"—and in stainless steel or vitreous enamel. *Bulletin* K1204 fully describes these self-flushing units. For a copy, write BRADLEY WASHFOUNTAIN CO., 2333 W. MICHIGAN ST., MILWAUKEE 1, WIS.

Municipal Castings

551 Valve, service or roadway boxes, meter boxes, manhole rings and covers and other reliable castings of standard, or special gray iron or non-ferrous metal are cataloged in *Bulletin* M 11. To obtain a copy, write BUFFALO PIPE & FOUNDRY CORP., DEPT. J., BOX 55—STATION B DE 6764, BUFFALO 7, N. Y.

2-in-1 Machine

552 This versatile unit lifts and digs, works in close quarters or stretches out for 70-foot reach. As a crane, it lifts 12 tons; within five minutes it can become a clamshell. For all the facts on Hydrocrane, or for free demonstration, write DEPT. 2H59, BUCYRUS-ERIE CO., SOUTH MILWAUKEE, WIS.

(See page 60 for more Bulletins)

MAYOR PURCHASING AGENT CITY MANAGER
COMMISSIONER SUPERINTENDENT

A five minute demonstration convinced them . . .
the TRUCK-LODER revolutionizes sewer cleaning

ONLY THE TRUCK-LODER:

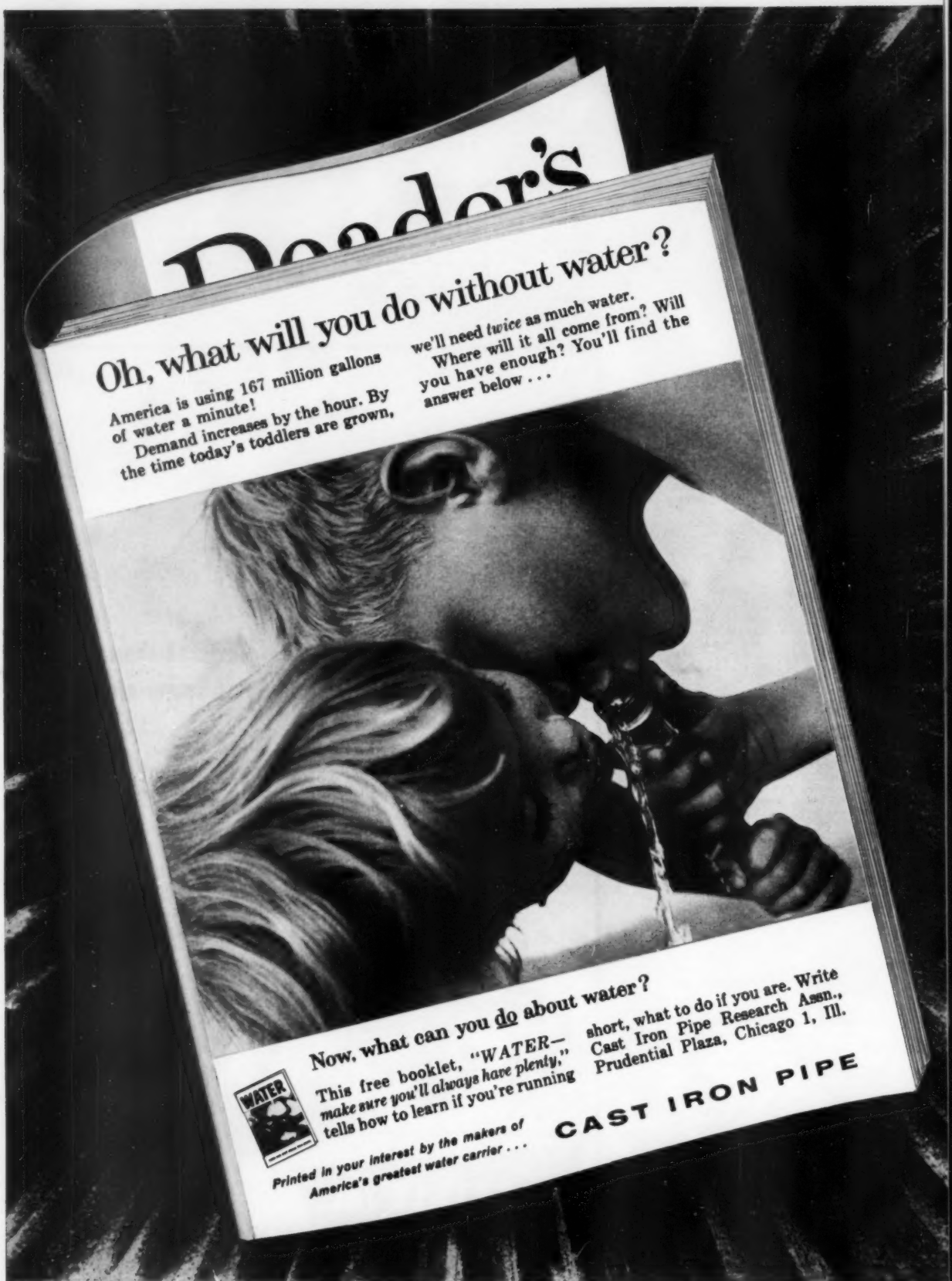
- **Brings deposit from street to truck direct!**
- **Eliminates dumping unsanitary sewer filth on street!**
- **Frees one man from bucket dumping and shoveling!**

PATENTED

FLEXIBLE INC.

3786 DURANGO AVE., LOS ANGELES 34, CALIF.

1005 SPENCERVILLE ROAD, LIMA, OHIO 415 SOUTH ZANGS BLVD., DALLAS, TEXAS


Oh, what will you do without water?
America is using 167 million gallons of water a minute!
Demand increases by the hour. By the time today's toddlers are grown, we'll need *twice* as much water.
Where will it all come from? Will you have enough? You'll find the answer below . . .
Now, what can you do about water?
This free booklet, "WATER—make sure you'll always have plenty," tells how to learn if you're running short, what to do if you are. Write Cast Iron Pipe Research Assn., Prudential Plaza, Chicago 1, Ill.
WATER
Printed in your interest by the makers of America's greatest water carrier . . .
CAST IRON PIPE

New Ad Campaign in Reader's Digest Dramatizes America's Water Problem

Cast Iron Pipe Research Association promotes better understanding of water supply and distribution problems

Offers Informative Booklet for Step-by-Step Action at the Local Level

Here's help for you and everyone else directly concerned with the supply, treatment and distribution of water—help that will acquaint the people in your town with the vital importance of this growing problem.

On the opposite page you see the first in a series of advertisements, this one appearing in February *Reader's Digest*. Placed by the Cast Iron Pipe Research Association, these striking advertisements point out to Mr. and Mrs. America how much we depend on a good water system and why we can no longer take it for granted.

Similar advertising will appear regularly this year in *U. S. News & World Report, Nation's Business, Better Homes & Gardens, American Home* and *Sunset* magazines to carry this public service message to millions of community leaders and homeowners.

Free Local Plan-of-Action Booklet

These ads offer a free booklet telling about the water problem. It shows how responsible citizens can acquaint themselves with the needs of their community. It also gives a step-by-step outline of action, telling how they can help their officials extend and improve the local water system through more adequate rate structures or financing.

We'll be happy to send you a free copy of this new booklet. Write to Thos. F. Wolfe, Managing Director, Cast Iron Pipe Research Association, 3440 Prudential Plaza, Chicago 1, Ill.

THREE REASONS WHY* CAST IRON PIPE IS *AMERICA'S GREATEST WATER CARRIER:

1. More miles of underground cast iron water mains are now in use than of all other kinds of pipe combined.
2. More miles of cast iron water mains are now being purchased and laid than of any other kind of pipe.
3. Impartial surveys prove that today's water utility officials and consulting engineers prefer cast iron pipe for underground water distribution by an overwhelming majority.

CAST IRON PIPE

THE MARK OF THE 100-YEAR PIPE

CATALOGS *for Improved Municipal Services*

Write directly to the address given or use the Post Card on the insert following pg. 52

Motor Graders

553 Maintaining, mixing black-top, widening, snowplowing, spreading fill, trimming, ditching, scarifying, fine-grading, sloping banks, rough grading —the 127-hp Forty Five motor grader does them all. For feature by feature discussion, write for descriptive literature to ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIV., MILWAUKEE 1, WIS.

Aluminum Lighting Poles

554 For complete information on this new line of aluminum lighting standards that include davit, up sweep single and twin arm design, write READ STANDARD, A DIVISION OF CAPITAL PRODUCTS CORP., YORK, PA.

Sluice Gates Feature Flush Bottom Closure

555 The many practical advantages for water flow control provided by HY-Q sluice gates with flush bottom closure are detailed in 12-page *Catalog* No. 75, which includes complete design and construction data, selector table of gate sizes with clearance dimensions, and recommendations for selection and installation. For a copy, write RODNEY HUNT MACHINE CO., WATER CONTROL APPARATUS DIV., ORANGE, MASS.

TREES AND WATER

Strange as it may seem, there are some disadvantages to civilization. Two of them are water pollution and ground water shortage.

The more people in a community, obviously the more serious the water pollution prospects become, due to both domestic and industrial waste materials. Also as populations grow, forest areas tend to decrease. Growing cities, new and bigger industries, more and larger farms mean less forested area and less trees, faster rainfall runoff and less ground water storage. Trees and underbrush are Nature's way of helping rainfall soak into the ground instead of running off into streams, rivers, and the sea.

Apparently Mother Nature and the Human Race need to make some adjustments in order to satisfy each other. Ground water shortage is one of the big problems facing the American water works industry, and emphasizes the fact that the job of water works superintendent is vitally important to the American way of life. Give your water works superintendent a hand—whenever you can.

This Series is an attempt to put into words some appreciation of the water works men of the United States.

M&H VALVE AND FITTINGS COMPANY
ANNISTON, ALABAMA
SUBSIDIARY OF WALWORTH

High Speed Truck Crane

556 A new 12-page bulletin covering the 11-ton Model T-350 carrier-mounted crane-excavator describes and illustrates its standards and optional job-speeding features, the complete line of Bantam-built crane carriers available for mounting and front-end attachments. For a copy, write SCHIELD BANTAM CO., WAVERLY, IA. Request *Bulletin* No. T-350.

New Look in Generators for Electric Plants

557 Generator design changes in the Onan 100kw to 200kw gasoline and diesel electric plants eliminate moving parts in exciter and voltage regulators, step up performance in primary and emergency standby installations. For full story, request literature on Magneciter generators from D. W. ONAN & SONS INC., 2543 UNIVERSITY AVE., MINNEAPOLIS 14, MINN.

Water Services for Municipalities

558 *Bulletin* No. 100 tells of the complete water service offered municipalities by LAYNE & BOWLER, INC., MEMPHIS 8, TENN. Included are pump design, manufacture and installation, initial surveys, site selection, foundation and soil sampling, well drilling, well casings and screens, construction of water systems, maintenance, chemical treatment of water wells, water treatment.

Cast Iron Pipe

559 Whether installation conditions be difficult or ideal, assembly is easy and rapid when Bell-Tite Joint cast iron pipe is on the job. A single molded rubber gasket is the only accessory required. Pipe is available in 3" to 24" diameters, in any thickness or weight. For literature, write JAMES B. CLOW & SONS, INC., 201-299 N. TALMAN AVE., CHICAGO 80, ILL.

Helicopters in Municipal Service

560 Traffic patrol and crime detection, fire control, disaster work—an increasing number of municipalities are using helicopters for these services. Many of these communities share in a mutual participation plan in which the Office of Civil and Defense Mobilization puts up half the purchase price of a Bell helicopter. For facts, write DEPT. 14E, BELL HELICOPTER CORP., FORT WORTH. TEXAS.

Dependable Water Works Products

561 Regulators, relief valves, meter setting equipment, stops and drains, drilling, tapping and inserting machines and fire hydrants are some items in a complete line of water works equipment discussed in literature available from MUELLER CO., DECATUR, ILL.

Protects Against Electrical Hazards

562 Maximum protection is given municipal crews working near power lines by an all fiber glass boom, which not only insulates against electrical hazards, but offers unusual stability, trouble-free operation, and easy, completely controlled response. For descriptive literature, or to arrange for demonstration, write PITMAN MFG. CO., GRANDVIEW, MO.

Measures Distance Accurately

563 This measuring wheel rolls along easily, measuring quickly and accurately to a fraction of an inch, even over irregular terrain. This time-saving instrument, so handy in street repair, construction and maintenance work, is sturdy and lightweight and is equipped with automatic brake. For literature, write ROLATAPE, INC., DEPT. AC-6, 1741 14TH ST., SANTA MONICA, CALIF.

(See page 62 for more Bulletins)

Special report to Caterpillar D8 Tractor owners:

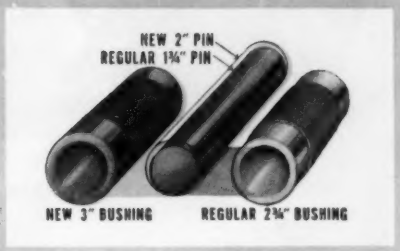
CAT CATERPILLAR

Parts you can trust
Dependable round-the-clock service

NEW TRACK COMPONENTS AVAILABLE FOR MOST D8 TRACTORS... GIVE UP TO 44% LONGER LIFE

Caterpillar's continuous research and testing pay off for you with the development of superior D8 track components. The next time you replace track parts, specify these new components. They last longer and require less maintenance. Here's what's available for 2U, 13A, 14A and 15A tractors:

30% STRONGER PINS AND BUSHINGS have more wear area to extend life. The big track pins are ¼" larger in diameter and heat-treated deep to resist wear . . . pins will not bend and cause uneven wear. The large contact areas of the bushings are hardened deep, both inside and out. Under field conditions these bushings have lasted up to 44% longer than regular bushings.



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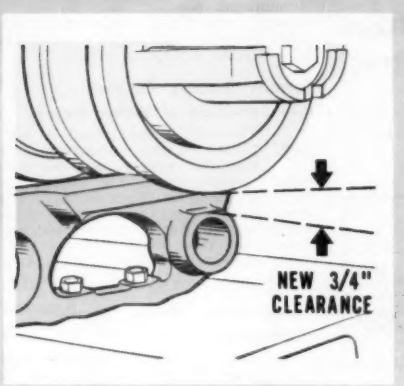
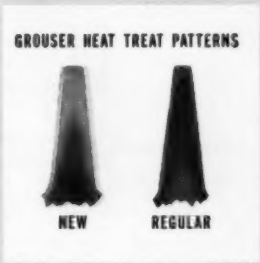


STRONGER, LONGER, HIGHER TRACK LINKS are 3 lb. heavier, 1" longer and ¼" higher. New length means fewer track sections are required. Increased height gives up to ¼" more *link pin boss-roller flange* clearance. Improved steel used in these links permits 80% deeper rail hardening and greater strength —pins and bushings stay tight *in the links* even under the roughest application.

• • •

NEW TRACK SHOE GROUSERS ARE 20% THICKER at the tip and are hardened much deeper than on regular shoes. The new shoe as a whole is bigger and heavier to resist bending, impact and wear. Track hardware used with the new track components is stronger—bolt diameter increased from ¾" to ⅞".



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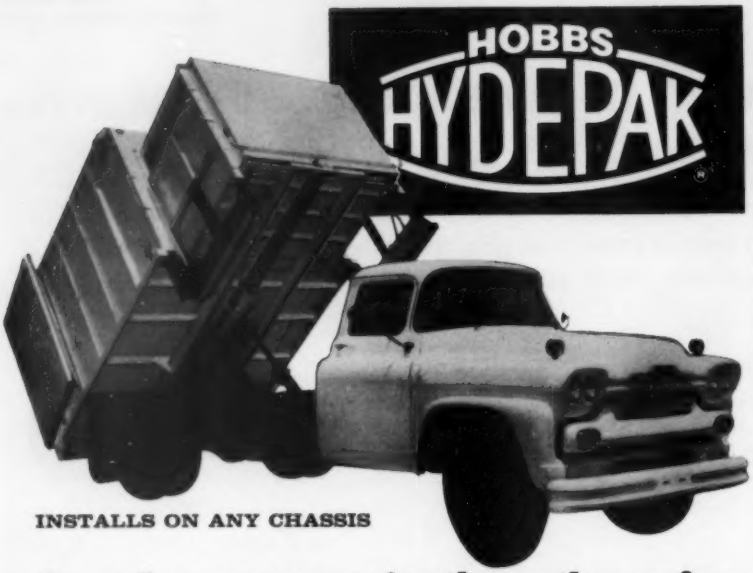
NEW DESIGN BORALLOY SPROCKET REPLACEMENT RIMS are available to accommodate the increased pitch of the longer links and bigger track bushings. Teeth are precision-machined to provide exact fit with track bushings—a major contribution to longer bushing life.

SEE YOUR CATERPILLAR DEALER for more information on extending your D8 track life. He has parts you can trust and round-the-clock service. See him today.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A. **CATERPILLAR**

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

Greater capacity means fewer trips to dump with



INSTALLS ON ANY CHASSIS

...3 yards more capacity than other refuse packers of comparable weight and cost!

Three yards more *compressible* capacity – inside the main storage compartment – means several more blocks can be covered by a Hobbs Hydepak before it's necessary to go to the dump site.

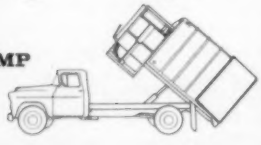
LOOK AT THIS COMPARISON:*		Hobbs Hydepak Model 1619	Body G	Body P
	Body Volume, cu. yds.	16.2	12.7	12.9
	Empty Weight, lbs. (including weight of trucks)	12,180	13,740	12,280

*Measurements by an independent testing laboratory for a major Southwestern city.

LOAD

COMPRESS

DUMP



Volume, as measured above, is body space into which refuse can be *completely compressed* and does not include the three-yard loading compartment at the front. When you buy a refuse collection body of a given capacity make sure how much of the total volume is really *compressible* volume, and how much is in the loading hopper, where only partial compression is possible. There's a big difference!

Available in 13, 16, 20 and 24 cu. yd. capacities (not including 3-yard loading compartment).

FOR MORE CAPACITY PER TRIP, GET HOBBS HYDEPAK

HYDEPAK is a division of HOBBS TRAILERS, leading manufacturer of truck-trailers and bodies

For full information, write to Hydepak Div., Hobbs Trailers, 609 No. Main, Fort Worth

FREE catalogs

Write directly to the address given or use the Post Card on the insert following pg. 52

Three Wheel Rollers

564 Complete specifications for standard and variable weight 3-wheel rollers equipped with torque converter and 2-speed transmission, designed for economical operation and faster steering at all speeds, and able to do better work with less effort may be obtained from HUBER-WARCO CO., DEPT. AC-7 MARION, OHIO.

Rubber and Plastic Traffic Guides

565 Whether you select Safe-T-Cones of rubber or polyvinyl chloride, you get a traffic control aid that is easy to handle, durable and effective for traffic channeling, utility repairs, line painting and temporary blockades. For details and information on special adaptors that increase the utility of these units, write RADIATOR SPECIALTY CO., CHARLOTTE, N. C.

Analyzes Fluid Networks

566 Municipal water works men, in particular, will be interested in this electrical device that can be easily and quickly set up to represent a working model of any pipeline network to provide rapid determination of flow rates and pressure losses caused by fluid friction in network pipelines or ducts. It shortcuts surveys, analyses and calculations. For details, write THE STANDARD ELECTRIC TIME CO., 125 LOGAN ST., SPRINGFIELD 2, MASS.

Permits Outside Reading and Servicing of Water Meters

567 Thoroughly field-tested in low temperatures, the Meterminder makes possible reading and servicing of water meters from the outside. It is corrosion resistant, light in weight, saves reading time, servicing time and eliminates call backs by meter readers. For details on this home water meter box, write HANDLEY-BROWN CO., JACKSON, MICH.

Clarifiers for Water, Waste Treatment

568 An engineers' bulletin with 32-pages of performance and designing data on the efficient Spiraflo Clarifiers for water and waste treatment is being prepared and will soon be ready for mailing. To reserve a copy of *Bulletin* 126, write LAKESIDE ENGINEERING CORP., 222 W. ADAMS ST., CHICAGO 6, ILL.

Sewer Cleaning Equipment

569 Whether you choose the largest or the smallest Turco Maxi-Power sewer cleaning unit, you'll find performance easy, quick and thorough and sewers restored to original flow, For a descriptive catalog, write TURBINE SEWER MACHINE CO., DIVISION OF CHAS. H. STEHLING CO., 1303 N. FOURTH ST., MILWAUKEE 12, WIS.

Assembles Report Sheet Facts

570 The sheets or pages of duplicated reports can be assembled or collated at rates up to 25,000 sheets per hour. The report or booklet can consist of 2 or 50 sheets. Work is done by a new collator occupying only 17½ square feet of floor space. It is fully automatic, simple to operate and competitive in cost. Complete specifications and price information are available from THOMAS COLLATOR INDUSTRIES, INC., 100 CHURCH ST., NEW YORK 7, N. Y.

(See page 65 for more Bulletins)

Now specified by the U. S. Army Corps of Engineers

STANDS UP TO JET HEAT AND BLAST

The new air age has put an extra burden on the ground. Exposed to the blast force and searing heat of jet aircraft engines, today's runways require a special sealant for high serviceability.

To meet these extreme conditions, government engineers have written rigid sealant specifications for runways. Leading manufacturers —such as Allied Materials Corp. makers of Jet Seal—are supplying the market with THIOKOL polysulfide polymers.

Use of THIOKOL liquid polymers as a sealant base produces a compound that does not flow out of joint under jet heat, will not be blown out of joint by jet blast.

THIOKOL base sealant cures quickly—bonds firmly to concrete—retains resiliency at temperature extremes—resists fuel, oil, solvents—protects perfectly for extreme periods of time.

Sealants that can take the punishment of jets and pounding of heavy aircraft will measure up to any sealing problem facing you. Mail the coupon to THIOKOL for full information.

Thiokol®
CHEMICAL CORPORATION
780 NORTH CLINTON AVENUE • TRENTON 7, NEW JERSEY
In Canada: Naugatuck Chemicals Division, Dominion Rubber Co., Elmira, Ontario

®Registered trademark of the Thiokol Chemical Corporation for its liquid polymers, rocket propellants, plasticizers and other chemical products.

FOR MORE INFORMATION: Mail coupon to Dept. 53, Thiokol Chemical Corp., 780 N. Clinton Ave., Trenton, N. J.

Gentlemen: Please send me available data on THIOKOL liquid polymer-base sealants for concrete application.

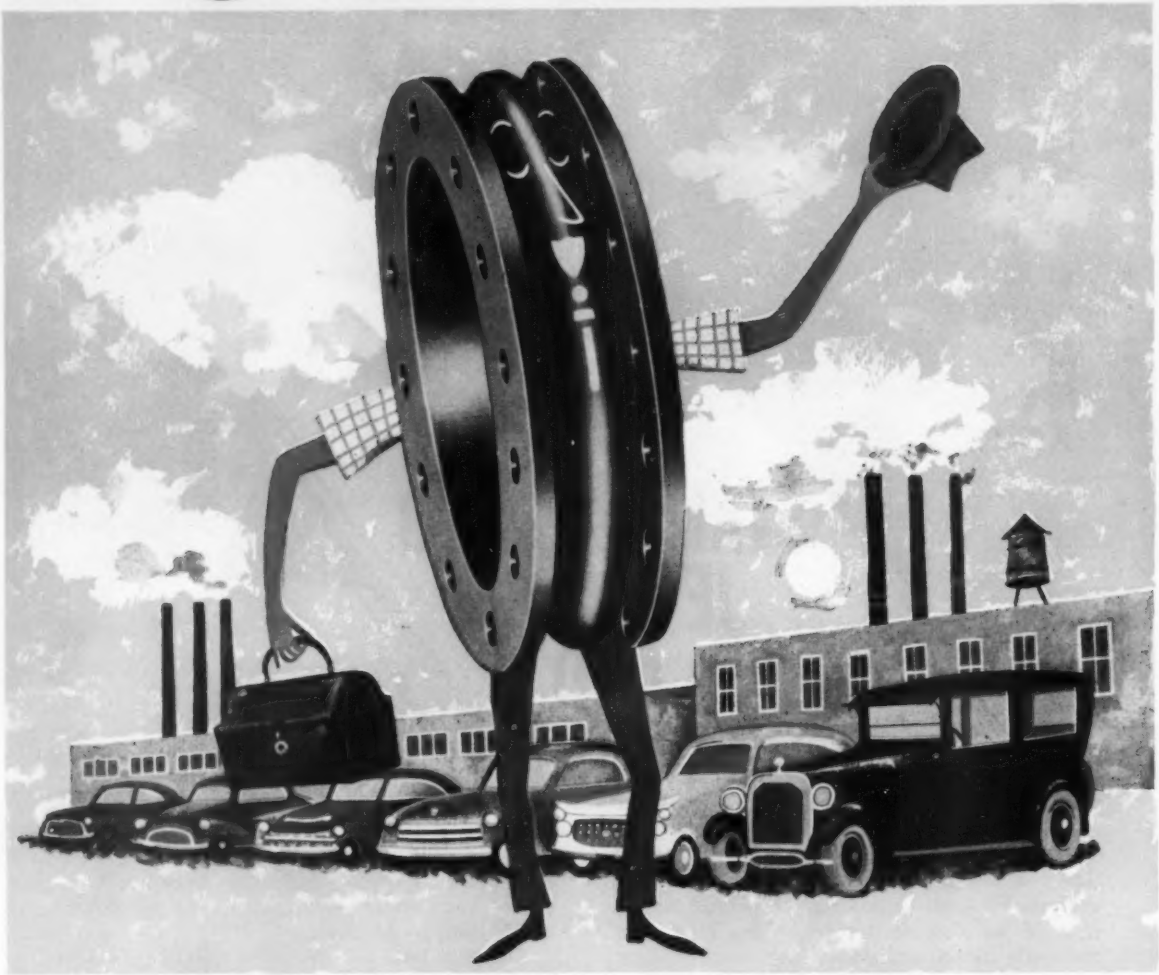
Firm _____

Street _____

City _____ State _____

Your Name _____

US RUBBER EXPANSION JOINTS



He started working 35 years ago
—we don't know when he'll retire!

We refer to one of the first expansion joints introduced to industry. Installed in the year 1924, it and its "U.S." brothers in an Eastern power station show no sign of tiring. They are the oldest expansion joints ever made, active or retired, *for "U.S." pioneered in expansion joints.*

No records have been retained of all the "U.S." Expansion Joints installed in 1924. We know of others of that date that just refuse to wear out, just refuse to cause trouble. We have records for subsequent years each testifying to the endurance and fine working performance of "U.S." Expansion Joints.

These economical, flexible connections are used in pipe lines to take up stresses caused by vibration, expansion and contraction. They stop transmission of noise, take care of misalignment. A wide range of industries relies on "U.S." Expansion Joints to prolong the life of equipment in pressure or vacuum lines.

• • •

When you think of rubber, think of your "U.S." Distributor. He's your best on-the-spot source of technical aid, quick delivery and quality industrial rubber products.

US RUBBER **Mechanical Goods Division**

United States Rubber

WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

Rockefeller Center, New York 20, N.Y. In Canada: Dominion Rubber Company, Ltd.

FREE catalogs

Write directly to the address given or use the Post Card on the insert following pg. 52

Improved Refuse Truck

571 A radically different packer blade design is said to add almost 4 cubic yards of usable capacity to this garbage and refuse collection truck body. In addition, it gives tighter pack and makes possible for better load distribution. Complete information on the new Model Big-"V" Packer, write M-B CORP., NEW HOLSTEIN, WIS.

Prepare for Early Snow

572 Ever been surprised by one of Dame Nature's early, unseasonable snow storms? Then you know how easily one can paralyze traffic, cause serious accidents, contribute to loss of business. An ample supply of rock salt stockpiled now can avoid these difficulties. For information on Sterling rock salt, write INTERNATIONAL SALT CO., SCRANTON, PA.

Water, Sewage and Industrial Waste Treatment Equipment

573 Is both the title and subject of 20-page *Book* 2617, which illustrates the latest sanitary engineering equipment and shows flow diagrams of how this equipment can be installed in typical water, sewage and industrial waste treatment plants. For a copy, write LINK-BELT CO., DEPT. RR, PRUDENTIAL PLAZA, CHICAGO 1, ILL.

Portable Concrete Vibrator

574 This high-cycle electric vibrator can handle 30 to 40 cubic yards of 2" slump concrete per hour; works in tight spots or deepest forms without damage to kink-proof handling hose. For full information, write HOMELITE, A DIVISION OF TEXTRON INC., 107 RIVERDALE AVE., PORT CHESTER, N. Y.

Steel Fencing

575 Built to take punishment, Cyclone steel fence gives reliable, safe service wherever used. Complete information on this rough, tough protective fabric can be obtained in booklet form by writing to CYCLONE FENCE, AMERICAN STEEL & WIRE, DEPT. B-79, 614 SUPERIOR AVE., N. W., CLEVELAND 13, OHIO.

Weeds Out Weeds

576 If you want to know the full story and capabilities of an extremely effective weed inhibitor-killer, ask FENCPAINTER DIVISION, 4911 S. RACINE AVE., CHICAGO 9, ILL., for a copy of its current 52-page brochure on Weed Out.

Street Lighting Equipment

577 All members of a reliable line of street lighting equipment are given full presentation in the *Street Lighting Catalog* published by REVERE ELECTRIC MFG. CO., 7420 LEHIGH AVE., CHICAGO 31, ILL.

Indexing Microfilms

578 A new booklet simplifies and explains the best methods for indexing microfilmed records. Considering that a single roll of microfilm can contain as many as 10,000 letter-size documents, the problem of locating any single document is greatly dependent on proper indexing of film. "How to Index Your Microfilm Records" is available without cost from RECORDAK ADVERTISING DEPT., WANAMAKER PLACE, NEW YORK 3, N. Y.

(See page 66 for more Bulletins)

HUBER-WARCO motor graders

balanced weight and power

The Huber-Warco 6-D & 7-D MOTOR GRADER series has been designed with the right blend of weight and power to handle tough grading quickly and efficiently. A combination of torque converter, tail-shaft governor and power-shift transmission assures constant power at the blade for a greater work volume. Horsepower range of the Huber-Warco 6-D & 7-D MOTOR GRADERS is 100 to 150 h.p. Your Huber-Warco distributor would like to show you the many other features of these modern graders. Contact him today.

MAINTAINER

MOTOR GRADERS

TANDEM ROLLERS

3-WHEEL ROLLERS

Products of HUBER-WARCO COMPANY, Marion, Ohio, U. S. A.

HUBER-WARCO COMPANY, Marion, Ohio, U.S.A.
Send me specifications on the Huber-Warco
☐ 6-D & 7-D series ☐ other motor graders
Send specifications on: ☐ Maintainer
☐ Tandem Rollers ☐ 3-Wheel Rollers

Name _____
Title _____
Company _____
Address _____
City _____ Zone ____ State _____
7-AC

HUBER W WARCO

FREE catalogs

Write directly to the address given or use the Post Card on the insert following pg. 52

Fibres for Street Sweeper Brooms

579 Flat steel wire, Palmyra stalks, African bass, split hickory—these top quality fibres are readily available at competitive prices to meet the needs of all street sweeper and gutter brooms. For literature, free samples, and information on street brooms, write FLO-PAC FIBRES, INC., 1501 4TH AVE. S., MINNEAPOLIS 4, MINN.

Aerial Mapping

580 Complete, accurate information is requisite to intelligent city planning. Aerial photomaps and topographic maps prove valuable aids to proper planning, coordination and construction of essential municipal facilities. To learn more about these services, write FAIRCHILD AERIAL SURVEYS, INC., 224 E. ELEVENTH ST., LOS ANGELES, CALIF.

Water Meter Settings

581 These settings provide protection, easy availability for reading, and trouble-free meter changes for proper maintenance of water meters. They include yokes, calibrated testing tanks, meter valves, lifter worm locks, kornerhorns. For descriptive literature, write THE FORD METER BOX COMPANY, INC., WABASH, IND.

Delivering over two million gallons of water a day, this new municipal well at Xenia, Ohio—equipped with an 18" Wire Wound Cook Well Strainer—will continue to produce at a steady maximum flow for many years to come. You can count on dependable service from a Cook Well Strainer because of its exclusive self-cleaning V-shaped slot that prevents clogging and guarantees maximum delivery over long periods. Larger inside than out, the V slot allows for maximum development —permits a fast free flow of water with minimum friction loss.

Why not investigate the advantages of Cook Well Strainers? Wire Wound and Brass Tube types available in all standard diameters with as many different slot sizes as required. Made from Red Brass, Silicone Bronze, Armco Iron, and Stainless Steel. Eight to twenty-four hour delivery often possible by telephoning Cincinnati HUmboldt 1-8800.

COOK WELL STRAINER CO.
6330 Glenway, Cincinnati 11, Ohio

WORLD'S LE[illegible] NAME IN WELL STRAINERS

Adjustable-Tread Tractors

582 When working in tight, cramped quarters, ditching or shaping a grade, these tractors narrow their wheel treads by as much as 20 inches. For mowing, or ground-hugging stability or straddling trenches, they spread wheels out. For complete story of these power-adjustable wheel treads that fit the tractor to the job, write ALLIS-CHALMERS MFG. CO., UTILITY TRACTORS & EQUIPMENT, MILWAUKEE 1, WIS.

Heavy-Duty Curb Builder

583 Now you can lay curbs at speeds of 4 to 6 feet per minute without curbing forms. This curb-builder lays, compacts and finishes straight or curved bituminous curbs in one fast trip, automatically cleaning and preheating surface ahead of machine. Compaction is equal to a 12-15 ton roll. For descriptive *Bulletin* No. CP-105, write E. D. ETNYRE & CO., OREGON, ILL.

Packaged Sewage Ejectors

584 A new, illustrated brochure gives dimensional data on packaged sewage ejectors for lifting liquids and solids in suspension. Typical installation views show how equipment is connected to sewage system. For a copy, write TEX-VIT SUPPLY CO., P. O. BOX 117, MINERAL WELLS, TEXAS.

Maintenance-Free Chain Link Fencing

585 This fencing requires no protective coating of any kind and corrosive atmospheres do not impair its appearance or usefulness. It has high tensile strength, is easy to erect, and is readily available. To learn more about it, send for a 12-page illustrated booklet, available from ALUMINUM COMPANY OF AMERICA, 2058-G ALCOA BLDG., PITTSBURGH, PA.

Efficient Water System Control

586 *Bulletin* 5903 describes the Femco "CMC" System, which provides telemetering for water levels, and monitoring and remote control for pumps and valves from a central control station. Indication and control functions can be performed by utilizing a single pair of wires; existing telephone wires can be used also. For a copy, write FEMCO, INC., IRWIN, PA.

Surer Sealing Butterfly Valves

587 *Bulletin* SLS gives full facts on butterfly valves that are new in both principle and performance. Advantages noted include drop-tight shut-off, elimination of shaft-sealing problems, less operating torque, easy rubber seat replacement without removing shaft or operator. For a copy, write DARLING VALVE & MFG. CO., WILLIAMSPORT 10, PA.

Registers Water Use Accurately

588 Water meters that offer sustained accuracy, long life, less maintenance, and assure greater revenue are thoroughly described in new literature available from CALMET METER DIVISION, WORTHINGTON CORP., 2301 S. MAIN, FORT WORTH, TEXAS.

Level Indicator and Control for Chemical Storage Bins

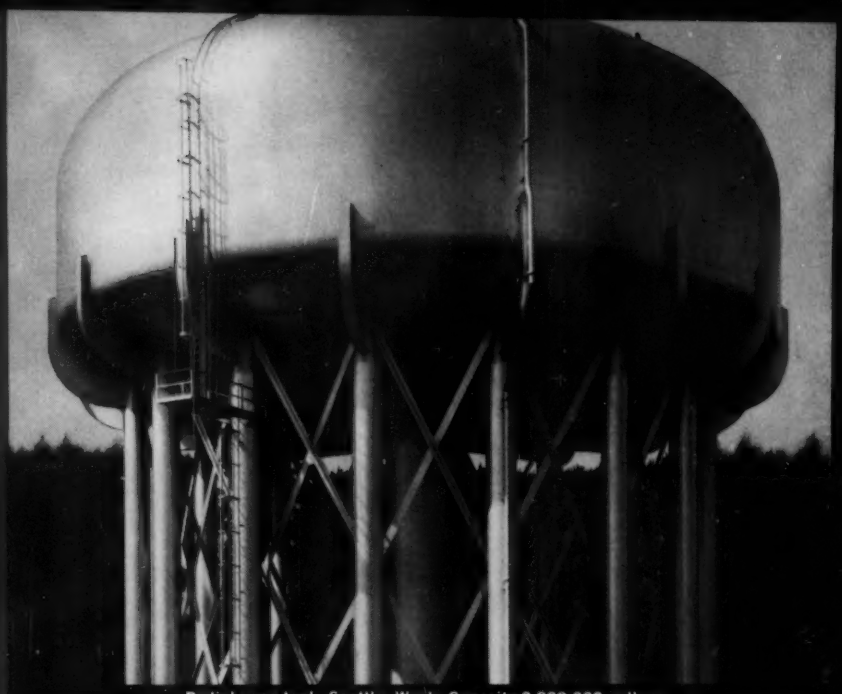
589 Bin-Vue indicators offer positive control and maximum operating efficiency wherever bulk chemicals are stored or used, as in water and sewage purification. According to *Bulletin* C-101, they reduce operating costs, prevent clogging, overflowing and choking in bins. Their limit switch acts as a fail safe device and can be connected for visible or audible control. Write CONVAIR, INC., P. O. BOX 9671, PITTSBURGH 26, PA.

(See page 70 for more Bulletins)

PDM

ELEVATED STEEL TANKS

ELEVATED STEEL TANKS



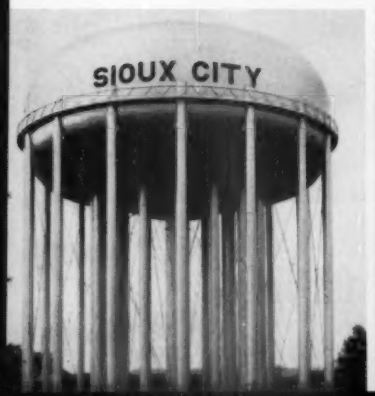
Radial cone tank, Seattle, Wash. Capacity 2,000,000 gallons.

FIRST IN EXCELLENCE

TO SERVE DEPENDABLY THE WATER STORAGE NEEDS OF MODERN AMERICAN COMMUNITIES

Pittsburgh-Des Moines

From the first PDM Elevated Steel Tank, pioneered in 1897, to the handsome structures of the present, *first quality* has been our continually-realized objective. You'll find in the wide range of PDM tank types and capacities the ideal unit for your requirements—guaranteed in performance and satisfaction. Let us submit a quotation.



Toro-segmental tank, Sioux City, Ia. Capacity 2,000,000 gallons.

Radial cone tank, Independence, Kansas. Capacity 750,000 gallons.

Double-elipsoidal tank, Melbourne, Fla. Capacity 300,000 gallons.

Pedestal sphere, Hawthorne, Calif. Capacity 250,000 gallons.

WRITE FOR this fully-illustrated 28-page "Modern Water Storage" brochure—detailing the range of PDM Elevated Steel Tanks. Free on request to our nearest office.

Pittsburgh-Des Moines Steel Company

Plants at PITTSBURGH, BALTIMORE, DES MOINES, SANTA CLARA, FRESNO, and STOCKTON, CALIF.

Sales Offices at:

PITTSBURGH (25).....3412 Neville Island
BALTIMORE (26).....Curtis Bay Station
NEW YORK (17)..Suite 2715, 200 E. 42d St.
CHICAGO (3)..616 First National Bank Bldg.
EL MONTE, CAL.....P. O. Box 2012
ATLANTA (5)....361 E. Paces Ferry Rd., N.E.
DES MOINES (8).....915 Tuttle Street
DALLAS (1).....1217 Praetorian Bldg.
SEATTLE (1).....Suite 320, 500 Wall St.
SANTA CLARA, CAL.....619 Alviso Road
DENVER (2).....323 Railway Exchange Bldg.

CLOW

UNDER WATER

4-man crew lays 1500 feet a day of CLOW 8" Bell-Tite Joint cast iron pipe through Florida swampland—often in 3 feet of water. Hancock Pipe Co., Clearwater, Fla., contractor.

AT 14° BELOW 0

Despite rocky terrain and digging through 2 to 3 feet of frost, workers were able to lay 50% as much 12" Bell-Tite pipe a day at 14 below zero as under normal conditions. Trench was 11 feet deep. Nels Nelson & Sons, Duluth, Minn., contractors.

OR IDEAL CONDITIONS

Laying 2000 feet a day of CLOW Bell-Tite Joint pipe under ideal conditions at Boca Raton, Florida. Reilly-Bates Corp., Pompano Beach, Fla., contractors. Black & Associates, Gainesville, Fla., consulting engineers.

CAST IRON

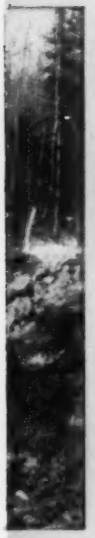
PIPE

PROVED...

CLOW Bell-Tite® JOINT

CAST IRON PIPE

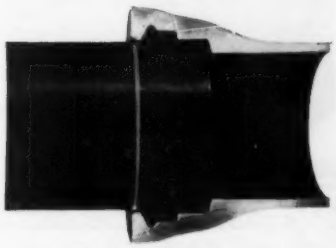
saves time and money under all installation conditions



Clow Bell-Tite Joint costs less to buy and less to install. Assembly is easy and rapid and the rate of installation depends only on the speed with which the trench can be excavated.

A single molded rubber gasket is the only accessory required. No bolts, no nuts, no followers, no couplings, no extras to buy. Clow Bell-Tite pipe is available from 3" to 24" in any thickness or weight in accordance with ASA, AWWA, or Federal specifications.

Clow Bell-Tite Joint is easily assembled—just wipe clean, lubricate and push spigot into the bell. When painted yellow stripe is no longer visible, joint is pressure tight.



OUR 81st YEAR
1878 • 1959

It will pay you to know the savings in time and money CLOW Bell-Tite Joint Cast Iron Pipe makes possible. Let us give you complete information on its many advantages.

CLOW CAST IRON PIPE

JAMES B. CLOW & SONS, INC.
201-299 North Talman Avenue, Chicago 80, Illinois

Subsidiaries:

Eddy Valve Company
Waterford, N.Y.

Iowa Valve Company
Oskaloosa, Iowa

the V-notch

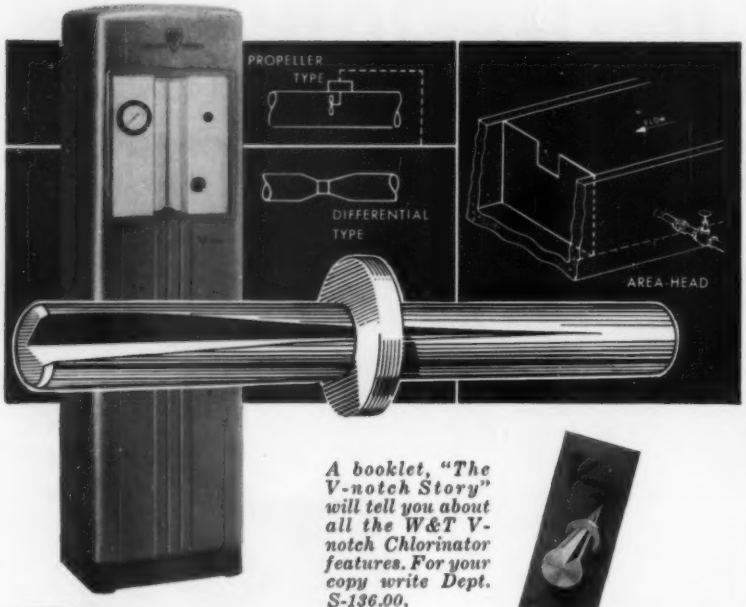
ready and waiting for your signal

Lots of jobs are done better automatically. Changing chlorine feed rate is now one of them. With the V-notch... the straight line metering action of the plug through the ring makes automation simple.

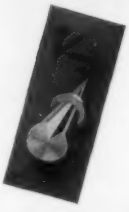
Merely by adding, not adapting, a W&T V-notch Chlorinator can give you any degree of automatic control you want—step rate, start-stop, program, proportional, even residual control.

With a V-notch Chlorinator any signal from any primary metering device can control chlorine feed. So anyone can afford automation.

And, of course, the right plastics make the whole chlorinator chlorine-proof.



A booklet, "The V-notch Story" will tell you about all the W&T V-notch Chlorinator features. For your copy write Dept. S-136.00.



WALLACE & TIERNAN INCORPORATED
25 MAIN STREET, BELLEVILLE 9, NEW JERSEY

is your feeding problem peculiar to your operation?

Wallace and Tiernan's volumetric feeders are so flexible that each job is practically custom built. W&T's experience is broad enough to meet any challenge.

Try us - for information write Dept. MV-1.00

WALLACE & TIERNAN INCORPORATED
25 MAIN STREET, BELLEVILLE 9, NEW JERSEY

FREE catalogs

Write directly to the address given or use the Post Card on the insert following pg. 52

Improved Street Sweeper

590 The dirt elevator of this fast-moving, clean-sweeping street sweeper is now designed around rubber sprockets that ease the strain on elevator chains, eliminate metal to metal wear, reduce abrasive action of sand and grit on chains and sprockets. The rubber sprocket dirt elevator is available in kit form for installation on older model sweepers. For details, write MOBIL SWEEPER DIV. OF THE CONVEYOR CO., DEPT. AC-7, 3260 E. SLAUSON AVE., LOS ANGELES 58, CALIF.

Nonclogging Pump Strainers

591 Unusual design of these pump strainers permits a fast free flow of water with maximum friction loss. Wire wound and brass tube types are available in all standard diameters with as many different slot sizes required. For details, write COOK WELL STRAINER CO., 6330 GLENWAY, CINCINNATI 11, OHIO.

Insect and Odor Control at Landfills

592 By writing to CLOROBEN CHEMICAL CORP., 115 JACOBUS AVE., SOUTH KEARNY, N. J., sanitarians can obtain authoritative manuals giving specific details and methods for the use of Cloroben in various types of landfill operations.

Tractor Shovels That "Swim"

593 Their competency in roadbuilding and material handling work long proved, these Michigan tractor shovels have now demonstrated they can work successfully in deep water. For full story, write CLARK EQUIPMENT CO., CONSTRUCTION MACHINERY DIVISION, 2495 PIPESTONE RD., BENTON HARBOR, MICH.

Surveyors' Transit

594 Municipal engineers and surveyors will appreciate the superior optical qualities and precision fashioning of the Paragon transit, for these factors contribute much to ease of use and performance excellence. This transit sights clearly and sharply, with less eye strain, and even under the most demanding conditions will stay true. For literature, write KEUFFEL & ESSER CO., DEPT. AC-7, HOBOKEN, N. J.

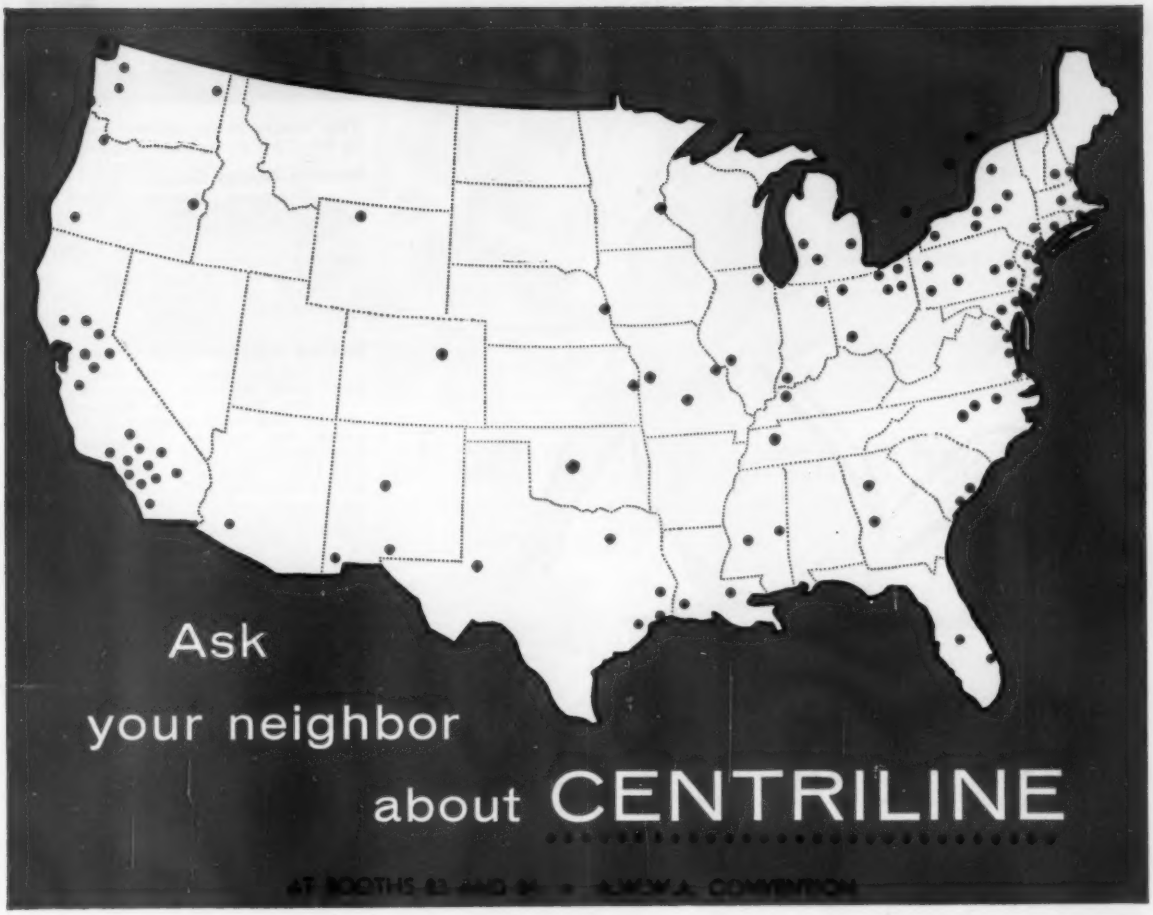
Something New in Mechanical Parking Garages

595 Facts in folder form give full information on this really new idea in mechanical parking garages that takes traffic off streets quickly and produces income even from the first floor. For folder, or to arrange for a showing of a color sound movie of an actual Park-A-Loft installation in a municipality, write DRESSER-IDECO CO., PARK-A-LOFT DIV., DEPT. P 95, 875 MICHIGAN AVE., COLUMBUS 8, OHIO.

Pulls and Pushes Pipe

596 Installation or renewing of pipe under pavement is accomplished more quickly with Trojan Pipe Puller & Pusher. This unit combines pushing and pulling operations, eliminates time-consuming resetting of grip. For complete information, and details on the several models available, write THE TROJAN MFG. CO., 1113 RACE DRIVE, TROY, OHIO.

(See page 72 for more Bulletins)



Spotted on this map are some of the places that have been served by the Centriline Process

Chances are that one of your colleagues has rejuvenated some of his city's piping by Centriline reconditioning. Here's your chance to find out.

Briefly, this process smoothly lines piping—*in place*—with cement-mortar, creating a pipe-within-a-pipe. This vastly increases carrying capacity, stops leakage, prevents corrosion and tuberculation, and prolongs pipe life indefinitely. Pressure goes up, pumping cost goes down, and there's no need to disturb traffic to replace mains. Over 6,000,000 feet of piping, from 4" to 144" diameter, have been treated by Centriline. *Ask your neighbor.*

Write today for a list of nearby officials whose cities have cut inconvenience and costs with this pipe-saving process. Hear what they have to say about Centriline. Then write or call us. We'll be glad to show you how Centriline can help *you* solve the problems of pipe conditioning.

CENTRILINE CORPORATION

A Subsidiary of Raymond International, Inc.

140 CEDAR STREET • NEW YORK 6, N. Y.

Branch offices in principal cities of the United States, Canada, and Latin America.

You name the place

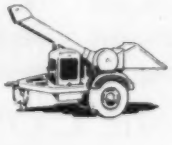
. . . and *without obligation to you*, a qualified representative will arrange a prompt demonstration of the fastest, most economical chipper in the world.

Then you can see for yourself how aggressive is the new power unit of ASPLUNDH CHIPPERS; how it hungers for great loads of bulky brush; how easily it consumes limbs of 6″ diameter.

And remember, the efficiency and economy of the completely safe, simply designed ASPLUNDH CHIPPER has been *proven in service* by the largest tree company in the world.

You will see, in demonstration, that an ASPLUNDH CHIPPER is, by far, the best buy in chippers on the market today.

WRITE TODAY for FREE illustrated folder and for a demonstration.



ASPLUNDH CHIPPER COMPANY
505 York Road, Jenkintown, Pa.
By Actual Test the Fastest Chipper Made

FREE catalogs

Write directly to the address given or use the Post Card on the insert following pg. 52

Removes Stumps Quickly

597 Illustrated literature from VERMEER MFG. CO., 1452 W. WASHINGTON AVE., PELLA, IA., depicts the Pow-R-Stump Cutter as a rugged, powerful machine that rips even the widest and deepest tree stumps to shreds in just minutes, leaving no stump to haul away and no gaping holes to fill.

Reduces Material-Handling Costs

598 You can operate this compact truck crane with ease, precision control and safety. It is self-loading, or can be used to load other units; boom swings 280°. Only an 18″ mounting space is needed, and choice of booms is available. For descriptive literature, write ANTHONY COMPANY, STREATOR, ILL.

Collects Leaves, Cleans Catch Basins

599 Both operations are done with dispatch and efficiency by the Obeco Model Twin-50 Special. Self-dumping, and with 16-yard capacity, it can vacuum an 8-foot swath, turn in savings in both time and money. For details, and for information on other models available, write OMAHA BODY & EQUIPMENT CO., 30TH & TAYLOR, OMAHA 11, NEBR.

Tamper-Proof Parking Meters

600 Design makes it virtually impossible to trip or jam these parking meters. The possibility of injury to timing mechanism is eliminated, as are mounting repair costs and lost revenue. For full information on manual, dual and automatic meters to help solve your metered traffic control problems, write DUAL PARKING METER CO., SUBSIDIARY OF ROCKWELL MFG. CO., PITTSBURGH 8, PA.

Hydraulic Pipe Pusher

601 If you are interested in obtaining information on a fast, easy way to install pipe and ducts under streets, walks and lawns, request literature on the Model 790 hydraulic pipe pusher from GREENLEE TOOL CO., 1780 COLUMBIA AVE., ROCKFORD, ILL., which manufactures other time-saving tools to speed pipe installation jobs, cut costs.

Waterproofing and Masrony Repairing Materials

602 Literature from THE CAMP COMPANY, INC., 6958 S. STATE ST., CHICAGO 21, ILL., discusses three products relating to this subject: *Hydro-Plug*, for stopping active leaks in masonry; *Aqua-Shield*, a waterproof coating able to withstand a high degree of hydrostatic pressure without penetration; *Latex Concrete Repair*, a concrete patching material that eliminates the need for chipping, roughening, priming or curing operations.

To Get Better Water Service

603 An 84-page book written for water utility superintendents, engineers, and public officials, shows (1) the benefits of good water service to a community; (2) how to evaluate your water system; (3) how to turn that evaluation into improved service; and (4) how to arouse the public to action. For a copy of *"Priceless Water"*, write JOHNS-MANVILLE, BOX 14, NEW YORK 16, N. Y.

(See page 74 for more Bulletins)

Don't run short of salt when demand is heaviest

Order enough Morton Rock Salt now

Be prepared before unexpected storms ice your streets and highways. Eliminate confusion, extra work and accidents by stockpiling Morton Rock Salt now for winter ice and snow removal. Store it in unused buildings, garages, loading platforms or outdoors near key traffic points. You can do this without loss or inconvenience—and, if you wish, a Morton Consulting Engineer will be happy to advise you.

Morton Rock Salt is 8 times better than abrasives. One man and one truckload of Morton Rock Salt does a better job of ice and snow removal than 8 men and 8 loads of abrasives. Morton Rock Salt leaves no messy residue on streets, in gutters and sewers . . . needs no flushing after a thaw . . . won't blow away or leave a rutted, dirty pavement. Non-toxic, Morton Rock Salt also is inexpensive. (It generally costs far less than calcium chloride.)

Send for more information today! Fill in and mail coupon below for valuable help with ice and snow removal.

☐ *Please send me your free book on ice and snow removal.*

☐ *I would like a Morton representative to advise me on how best to stockpile Morton Rock Salt for my town.*

Name_____

Title_____

Address_____

City_____ County_____ State_____

MORTON SALT COMPANY

INDUSTRIAL DIVISION

Dept. AC-7 120 So. LaSalle Street, Chicago 3, Illinois

FREE catalogs

Write directly to the address given or use the Post Card on the insert following pg. 52

Low Capacity Chemical Feeder for Small Water Systems

604 *Bulletin* Ref. No. 1913.20A-1 describes an air or water-operated diaphragm-type chemical solution feeder, specifically designed for low-cost controlled feeding of hypochlorite or other water treatment solutions into small water systems usually having a capacity of not more than 25 gallons per minute. For a copy, write B-I-F INDUSTRIES, INC., 345 HARRIS AVE., PROVIDENCE 1, R. I.

Water Treatment Equipment

605 A copy of *Bulletin* 9141 will introduce you to a variety of water treatment equipment units and methods that provide maximum scope in design to meet individual needs. For a copy, write DORR-OLIVER INC., STAMFORD, CONN.

Dependable Parking Meters

606 These manual meters are said to provide higher revenue, lower maintenance, longer productive life. For complete information, as well as earning and upkeep records of many MI-CO meter installations, write MI-CO PARKING METERS, P. O. BOX 668-EN, COVINGTON, KY. Also ask about the company's security system for collecting parking-meter coins.

Housings for Control Centers

607 These housings bring equipment of any centralized control center into compact arrangement, within easy reach and view of the operator. They comprise a modular enclosure system ideally suited for water and sewage treatment plants and fire and police department headquarters. For details, request *Catalog* 106 from ELGIN METAL FORMERS CORP., 630 CONGDON, DEPT. 1233, ELGIN, ILL.

Water Works Service Valves

608 If you desire infomation on valves and hydrants, write to EDDY VALVE CO., WATERFORD, N. Y., which manufactures a full line of valves for underground or special services to answer almost any specification for iron body valves.

Swimming Pool Filters

609 Engineered to give best filtration at least cost and designed to save construction time and cost, the Diavac package filter system for swimming pools combines the use of diatomaceous earth with the vacuum principle. A 4-page brochure shows its many advantages and unusual features. For a copy, write CHESTER PRODUCTS, INC., BELLE AVE. AND B & O R.R., HAMILTON, OHIO.

Refuse Deodorant

610 Refuzene meets the needs of the refuse remover for a safe, low-cost refuse deodorant. It inhibits decomposition of garbage by killing odor-forming bacteria, can be sprayed on, and is said to be 10 times more effective and long-lasting than ordinary disinfectants. For details, write COUNTY CHEMICAL CO., 2543 N. JERUSALEM RD., EAST MEADOW, N. Y.

Increase Sewage Plant Capacity

611 Informative literature from CHAIN BELT CO., 4648 W. GREENFIELD AVE., MILWAUKEE 1, WIS., explains how it is possible to increase sewage plant capacity economically through use of the Rex Verti-Flo, which augments settling tank capacity, the Rex Rim-Flo, which enlarges capacity of circular clarifiers, and the Rex Float-Treat System, which provides overload relief.

Measures Up to Any Concrete Sealing Problem

612 Available data on this liquid polymer-base sealant for airport runway expansion joints and concrete application emphasize that it cures quickly, bonds firmly to pavement, retains resiliency at temperature extremes, resists fuel, oil, solvents, and protects perfectly for a long time. For more information, write DEPT. 53, THIOKOL CHEMICAL CORP., 780 N. CLINTON AVE., TRENTON, N. J.

Reliable Chlorine Control

613 Automatic chlorine control—step rate, start-stop, program, proportional, residual—that is both simple and dependable is discussed in "The V-notch Story," which features a chlorinator that needs no auxiliary water supply and is chlorineproof. For a copy of this booklet, write WALLACE & TIERNAN INC., 25 MAIN ST., BELLEVILLE, 9, N. J.

Brush Chippers

614 The new Beaver brush chipper produces large or small chips. For other facts and features, and for information on all six new models of MITTS & MERRILL brush chippers, write the company at 1003 S. WATER ST., SAGINAW, MICH. Request *Catalog* No. 657.

(See page 77 for more Bulletins)

IGLOO...

rugged as the men who use them

IGLOO leads in water cooler sales because it's stronger, lasts longer. IGLOO will keep more men on the job more of the time. When you order water coolers, specify IGLOO. Available in 2, 3, 5, 10 and 15 gallon sizes.

IGLOO No.1

IGLOO CORPORATION

BOX 8227 MEMPHIS 4, TENN.

first in sales/buy the best cooler--buy IGLOO

PLEASING SYMMETRY plus SOUND ENGINEERING

Modern and streamlined, COLE Spherical tanks on tubular towers combine sound engineering with pleasing design. Base of structure is designed to occupy a minimum of ground space.

A COLE elevated tank can solve your municipality's water supply and distribution problem. Take advantage of our 103 years specialized knowledge and experience. Capacities from 5,000 to 2,000,000 gallons. Write for *Tank Talks.*

Elevated Tanks, Pressure Vessels, Chemical and Processing Equipment from Aluminum, Stainless and Carbon Steel, Monel and Other Alloys.

Established 1854

R. D. COLE MANUFACTURING CO.
COLE
NEWNAN, GEORGIA

Good Roads MACHINERY

LEAF COLLECTOR

Can pay for itself in one season!

Operating like a giant vacuum cleaner, the Leaf Collector pulls leaves and litter (wet or dry) into its 14 cu. yd. self-dumping hopper for quick easy disposal. Sturdy flexible intake hose covers a 6-foot path and can be maneuvered into hard-to-reach places. Heavy-duty 4-cylinder industrial engine drives the abrasive-resistant fan.

The Good Roads Leaf Collector is a favorite with maintenance departments because of its speed, flexibility and operating economy. Its low initial cost is usually recovered by man hours saved in the first season of operation. Available truck or trailer mounted. For complete details, see your Good Roads distributor or write:

Good Roads MACHINERY **GOOD ROADS MACHINERY Corp.**
MINERVA, OHIO

Ferri-Floc
FERRIC SULFATE

The Superior COAGULANT With The Plus FACTORS

- Excellent taste and odor control
- Increased filter runs
- Coagulation over wide pH ranges
- Rapid floc formation
- Turbidity removal
- Color removal
- Manganese and Silical removal
- Bacteria removal
- Ease of operation
- Economy

WATER TREATMENT

Efficient Coagulation of Surface or Well Water . . . Effective in lime soda-ash softening . . . Adaptable in treatment of all industrial applications.

Ferri-Floc TC FERRIC SULFATE

SEWAGE TREATMENT

Coagulates over wide pH ranges and provides efficient operation regardless of rapid variations of raw sewage . . . Very effective for conditioning sludge prior to vacuum filtration or drying on beds.

Ferri-Floc gives smoother, more efficient and trouble free operation. Whatever your particular water treatment problem may be, you can depend on Ferri-Floc doing a superior job and doing it efficiently and economically—Ferri-Floc is a free flowing granular salt which can be fed with few modifications through any standard dry feed equipment. It is only mildly hygroscopic, thereby permitting easy handling as well as storage in closed hoppers over long periods of time.

FREE BOOKLET Let us send you without charge, a 38-page booklet that deals specifically with all phases of coagulation—just send us a postal card.

SULFUR-DIOXIDE HIGHEST QUALITY SO_2

SULFUR DIOXIDE is used most effectively for dechlorination in water treatment and to remove objectionable odors remaining after purification.

COPPER SULFATE safely controls about 90% of micro-organisms normally encountered in water treatment plants efficiently and more economically than any other chemical.

COPPER SULFATE

TC

TENNESSEE CORPORATION
617-629 Grant Building, Atlanta, Ga.

AMERICAN METERS

HAVE WHAT THE WATER SUPERINTENDENT WANTS

ACCURACY UNSURPASSED

AMERICAN Solid Casing Meter

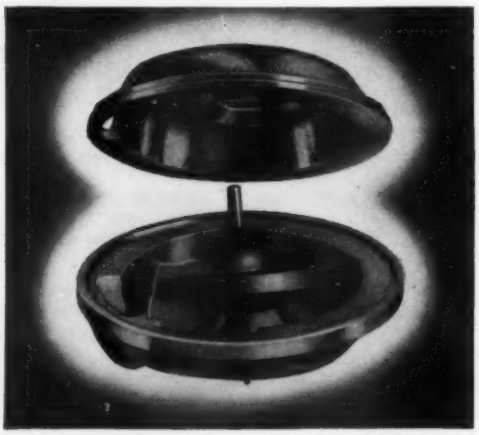
- **THICK DISC**
- **PRECISION MANUFACTURE**

AMERICAN METERS are designed for accuracy; accuracy that resists changes caused by wear; accuracy that assures a full return for water delivered — even after many years of Service.

The reason for this accuracy record is the thicker measuring disc used exclusively in AMERICAN METERS. Increased thickness reduces slippage between disc and measuring chamber wall and the seal is maintained in any position of the disc.

Precision machining of all parts reduces friction and wear for continued measuring accuracy.

Yes, tests prove, AMERICAN METERS have the high degree of Accuracy Water Superintendents want!



- The thick disc in AMERICAN METERS makes a more efficient seal against slippage than a thin disc with the same clearance.

BUFFALO METER COMPANY
INCORPORATED

2902 Main Street
Buffalo 14, New York

FREE catalogs

Write directly to the address given or use the Post Card on the insert following pg. 52

Long Pinch Pintle Chain for Sewage Works

615 Designed to provide great strength at minimum weight, to prevent the entrance of grit, and to wear longer, this long pinch pintle chain is highly serviceable and moderate in price. It is ideal for use with scum removers, grit washers, sludge collectors. For descriptive literature, write MOLINE MALLEABLE IRON CO., ST. CHARLES, ILL.

Water Purification Equipment

616 Water purification plants and equipment, vertical and horizontal pressure filters, water softening and swimming pool equipment—complete facilities for water purification, and engineering cooperation and services, are discussed in literature, available from ROBERTS FILTER MFG. CO., DARBY, PA.

Asbestos-Cement Sewer Pipe

617 Watertight, roottight, lightweight, easy to install is the way descriptive literature characterizes this asbestos-cement sewer pipe with Fluid-Tite couplings. For details, and information on crushing strength, write KEASBEY & MATTISON CO., AMBLER, PA.

Cuts Quickly Through Large Diameter Pipe

618 Whether the pipe be cast iron water main, asbestos cement pressure pipe, standard or extra-heavy duty soil pipe, or terra cotta or clay tile, this hydraulic pipe cutter cuts through large diameters with speed and ease. For literature, write WHEELER MANUFACTURING CORP., BOX 688, ASHTABULA, OHIO.

Expansion Joints for Water, Sewer, Pressure Lines

619 These economical, flexible connections prolong the life of equipment in pressure and vacuum lines. They take up stresses caused by vibration, expansion and contraction, stop transmission noise, and take care of misalignment. For descriptive literature, write UNITED STATES RUBBER, MECHANICAL GOODS, DIV., ROCKEFELLER CENTER, NEW YORK 20, N. Y.

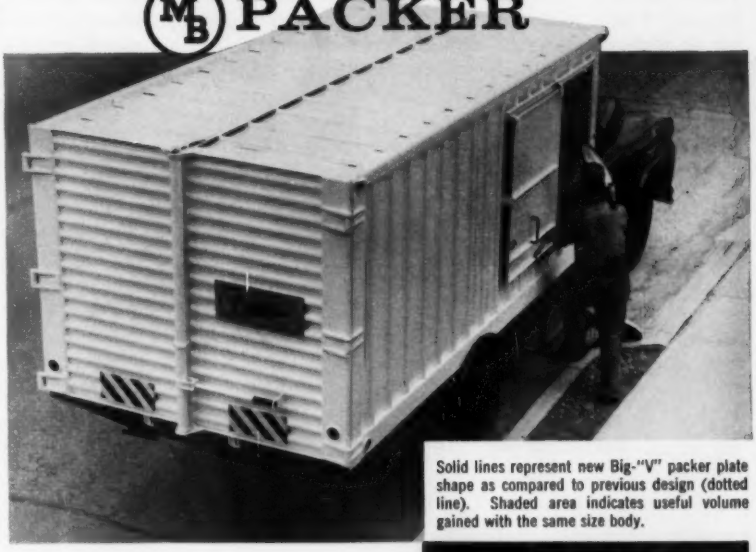
Valves & Fire Hydrants

620 Dependable valves and fire hydrants as well as fabricated pipe for pumping stations and sewage treatment plants are described in literature available from TRAVERSE CITY IRON WORKS, TRAVERSE CITY, MICH. Mechanical joint, bell and spigot, flanged and special fittings are discussed also.

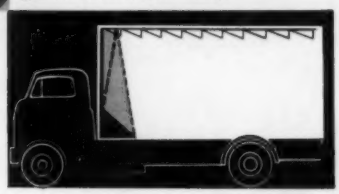
Locates and Traces Pipe

621 *Catalog* AC-7 discusses an efficient, low-maintenance pipe detector and tracer, equipped with built-in battery tester, all-metal case that removes static, snap-on tubular handle, and written "life-time" guarantee. For a copy, and technical data on Detectron "505," write COMPUTER MEASUREMENTS CORP., UTILITIES INSTRUMENTS DIVISION, 5528 VINELAND AVE., NORTH HOLLYWOOD, CALIF.

NOW...more capacity in the new Big-"V" model MB PACKER



Solid lines represent new Big-"V" packer plate shape as compared to previous design (dotted line). Shaded area indicates useful volume gained with the same size body.



NEW PACKER PLATE DESIGN ADDS 4 CU. YDS. CAPACITY

See how the new Big-"V" models give you BIG VOLUME—more useable *inside* capacity as well as fully-rated *compacted* volume. Because of the new vertical packer blade design, the plate is flush with the front of the body during loading, giving you up to 4 cu. yds. of useable area above the rated compacted capacity of the body! Look at the chart below for a dramatic comparison of the new total *useable* capacity and the rated capacity.

Rated Capacity — cu. yds. (Actual Compacted Volume)	14	16	20	24
Total Inside Capacity — cu. yds. (Actual Compacted Volume including Loading Area)	18	20	24	28

NEW Because of the new blade shape, the load is compacted *upward* with greater force to provide a tighter "pack" at the top of the load. And you get better load distribution on the truck chassis with the center of the load moved forward.

NEW A double row of 8" "shark's teeth" mounted in the top of the Big-"V" model increases retention of refuse and density of the load. By preventing "fall-back" of material, the load stays put . . . tightly packed.

NEW Sturdy fold-out steps beneath each side loading door provide greater standing room—easier loading. Steps quickly flip in or out, as needed.

Combine these features of the new Model Big-"V" with the most efficient, simple power train and packing method developed, and you have a modern compaction body that beats any comparison! Ask your distributor for a demonstration soon, or write the M-B Corporation, New Holstein, Wis.

QUALITY MUNICIPAL AND INDUSTRIAL EQUIPMENT SINCE 1907

M-B CORPORATION NEW HOLSTEIN WIS

LINE MARKERS PACKER BODIES SWEEPERS

TRACTOMOTIVE charts the

These charts are your guide for choosing a bucket and a loader that is just right for your job. You will operate at highest efficiency with the correct size bucket and the right size loader — get the highest possible production. No costly maintenance from overloading! And your loader will last longer, too. There's a whole family of buckets to choose from for each machine in the 5,300, 7,000 and 9,000-lb carry class.

How to use the charts

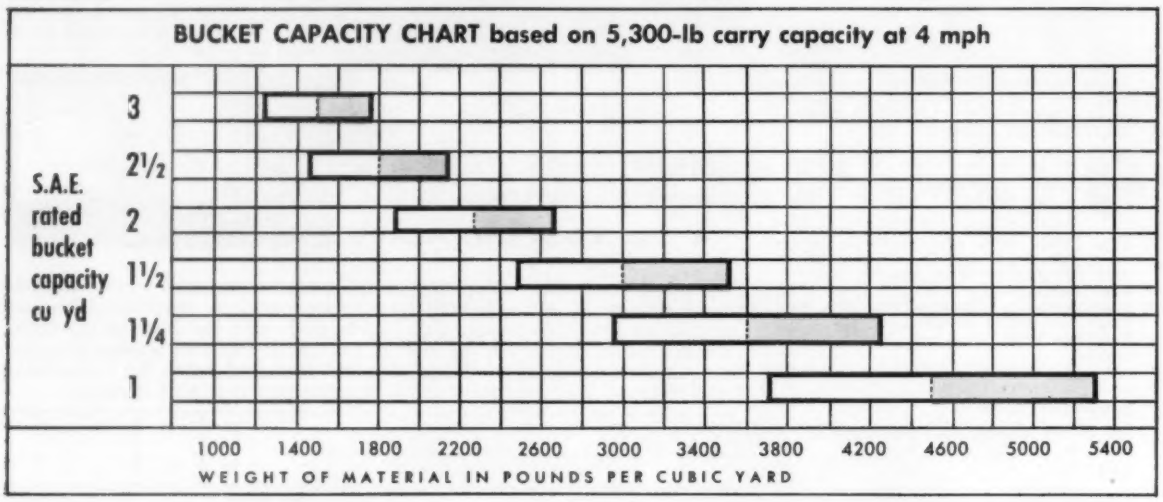
The bar opposite each bucket size shows the weight of materials per cu yd that you can handle with this size bucket. The area in color on the right side of the dotted line in the bar indicates the weight of materials that can be handled where loading is normal and operating conditions are good. The left side of the bar indicates the weight of materials that can be handled where conditions are adverse — such as steep grades, rough ground, or where you get excessive heaping.

Example: Suppose you are loading sand weighing 2,600 lb per cu yd. If your operating conditions are good and you get normal loads, you would choose the 3-yd bucket for the TL-20, the 2½-yd for the TL-16, or the 2-yd for the TL-14.

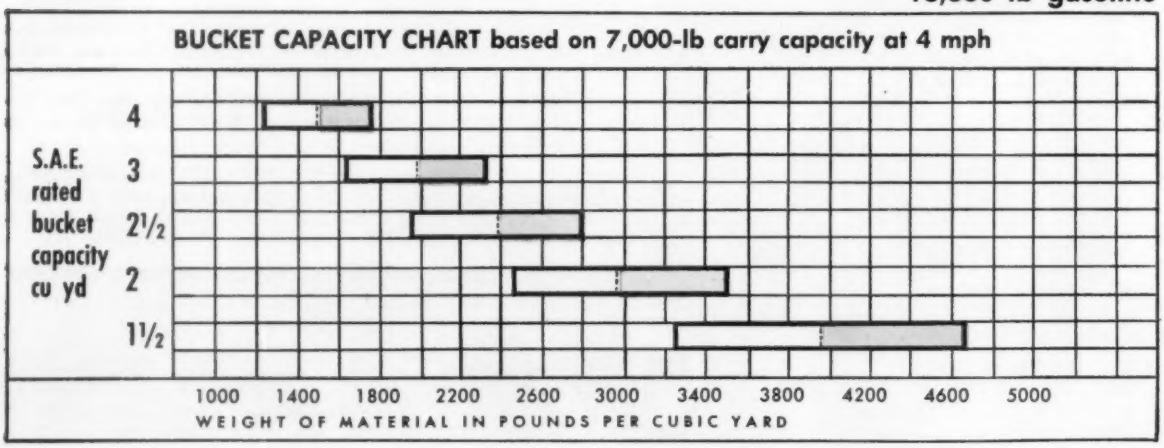
If your operating conditions are adverse or you get excessive heaping, you would choose the 2½-yd bucket for the TL-20, the 2-yd for the TL-16, or the 1½-yd for the TL-14.

Your Allis-Chalmers dealer will be glad to go over these charts with you . . . discuss your job requirements and help you select the most efficient size bucket and loader for your work.

TL-14 TRACTOLOADER 81.5 hp diesel • 86 hp gasoline • Weight: 14,480 lb

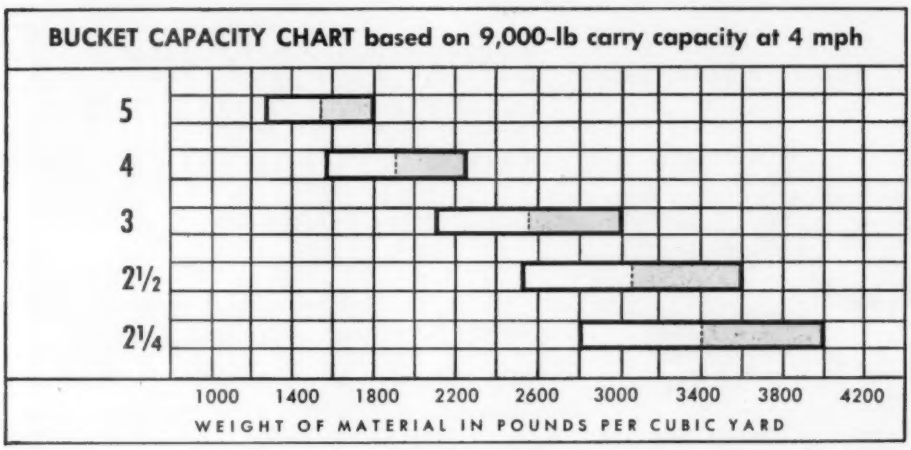

BUCKET CAPACITY CHART based on 5,300-lb carry capacity at 4 mph
S.A.E. rated bucket capacity cu yd
3
2½
2
1½
1¼
1
1000 1400 1800 2200 2600 3000 3400 3800 4200 4600 5000 5400
WEIGHT OF MATERIAL IN POUNDS PER CUBIC YARD

TL-16 TRACTOLOADER 104 hp diesel • 109 hp gasoline • Weight: 17,600 lb diesel 16,380 lb gasoline


BUCKET CAPACITY CHART based on 7,000-lb carry capacity at 4 mph
S.A.E. rated bucket capacity cu yd
4
3
2½
2
1½
1000 1400 1800 2200 2600 3000 3400 3800 4200 4600 5000
WEIGHT OF MATERIAL IN POUNDS PER CUBIC YARD

way to proper bucket selection

TL-20 TRACTOLOADER 130 hp diesel • Weight: 23,150 lb



To find out what a **TRACTOLOADER®** can do for you . . . ask your Allis-Chalmers dealer to show you **"And a Great Deal More."**

SOLD AND SERVICED BY YOUR ALLIS-CHALMERS DEALER

TRACTO LOADERS
TRACTO SHOVELS
TRACTO RIPPERS
TRACTO HOES
TRACTO SIDEBOOMS

TRACTOMOTIVE

TRACTOMOTIVE CORPORATION • DEERFIELD, ILLINOIS

TRACTO — *a sure sign of modern design*

clear to the bottom!

Anyone faced with the problem of keeping swimming pools free of unsightly, slippery algae will welcome this news about a proved algae-killing chemical. HYAMINE 2389 will control the common strains of algae found in swimming pools . . . and with regular treatments keep the water, walls and walkways clean and clear. Formulations based on this chemical are also excellent disinfectants for swimming gear and locker rooms. Write for names of suppliers and additional information.

HYAMINE is a trademark, Reg. U.S. Pat. Off. and in principal foreign countries.

Chemicals for Industry

ROHM & HAAS COMPANY

WASHINGTON SQUARE, PHILADELPHIA 5, PA.

HYAMINE 2389

"Hardrock Smitty" says:

BEFORE YOU BUY ANY COMPRESSOR CHECK THE SMITH 125 FOR EFFICIENCY AND ECONOMY

Check—

- ✓ low initial cost
- ✓ low operating cost
- ✓ easy maintenance
- ✓ simple compact design
- ✓ 12 volt electrical system
- ✓ 125 cfm at 1165 RPM

When you do, you'll agree with "Hardrock Smitty" that you can't buy better than Smith.

Ask your dealer for an "on the job" demonstration.

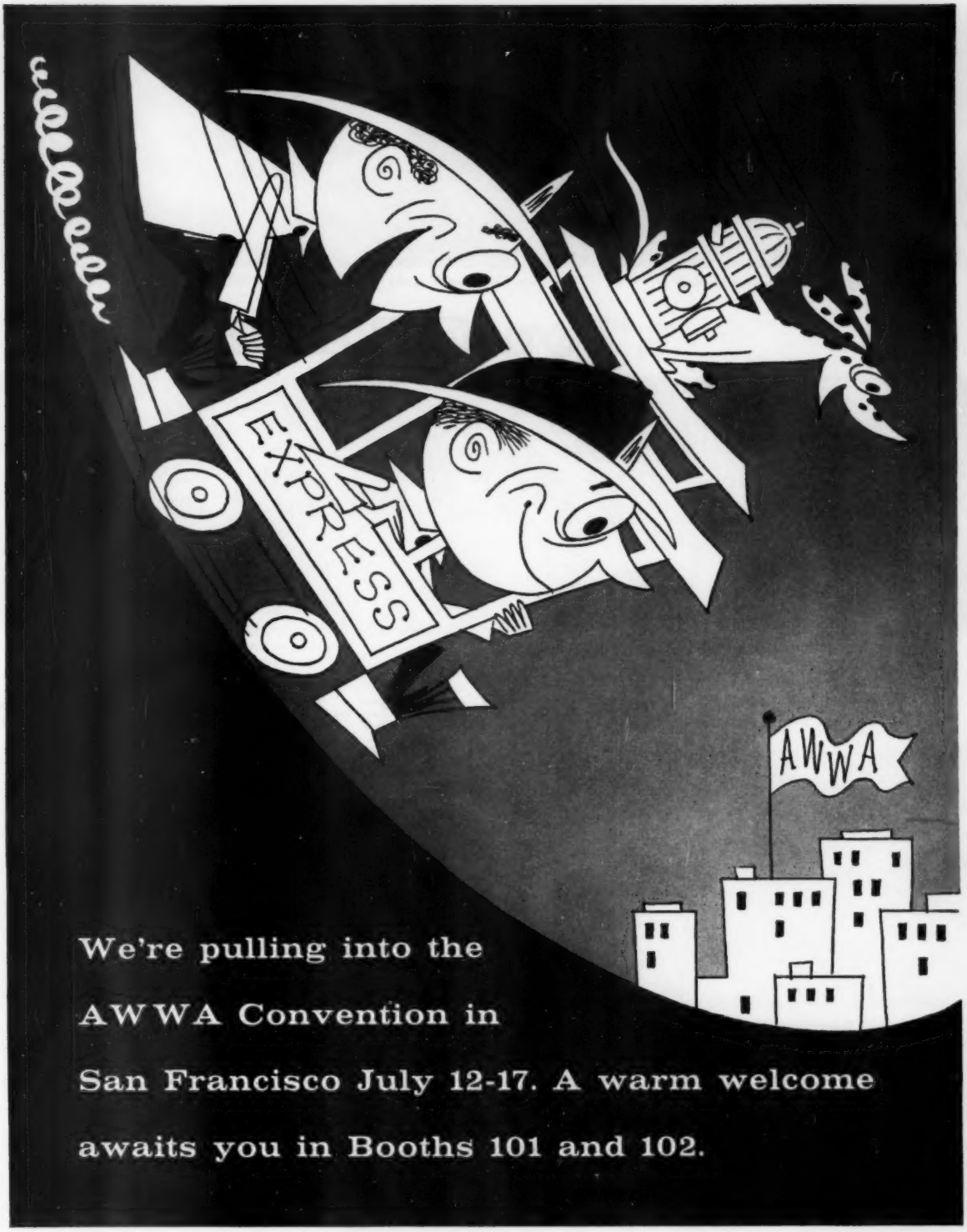
Model 125P.

- 6 cylinder Hercules Industrial engine
- 3 cylinders for compression, 3 cylinders for power. 95% of all moving parts available from your nearest industrial engine dealer.
- Operates two 85 lb. paving breakers at the same time.

Write us for complete information and the name of your nearest dealer.

SMITH AIR COMPRESSORS

GORDON SMITH & COMPANY, INC., Bowling Green, Ky.
425 College St.



R. D. WOOD COMPANY

Public Ledger Building, Independence Square
Philadelphia 5, Pa.

Manufacturers of fire hydrants, gate valves, and cast-iron pipe

Maintaining county road in Colorado

Mixing black-top in Idaho

Widening a highway in Oklahoma

Top GRADE MEN

Snowplowing a county road in Colorado

Spreading fill in Alabama

choose Allis-Chalmers

Trimming up a haul road in Mississippi

Ditching county road in Iowa

When selecting motor graders for your next job, consider this swing to the FORTY FIVE . . . then check this *combination* of features available only in Allis-Chalmers motor graders:

- ROLL-AWAY moldboard, an Allis-Chalmers exclusive, reduces friction by moving the load up and ahead of the board . . . handles more material per horsepower than any other make.
- High-arch front axle clears big windrows . . . reduces axle dozing that hampers steering and cuts production.
- Extra high throat clearance accommodates big rolling loads without jamming material against the circle.
- Toggle-type controls, another Allis-Chalmers exclusive, give operators positive control . . . eliminate wrist-snapping backlash.

move ahead with ALLIS-CHALMERS

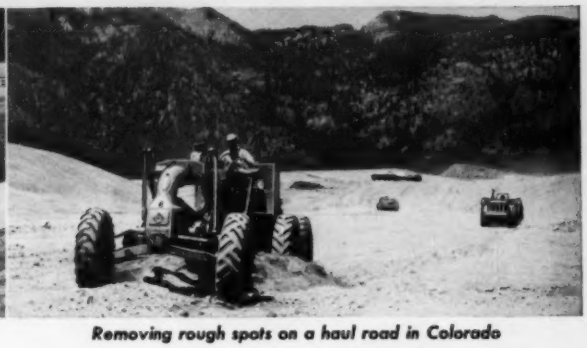
. . . power for a growing world

Pioneering city street in Alabama

Scarifying a township road in Canada

all over the country

Fine-grading base material in Oregon



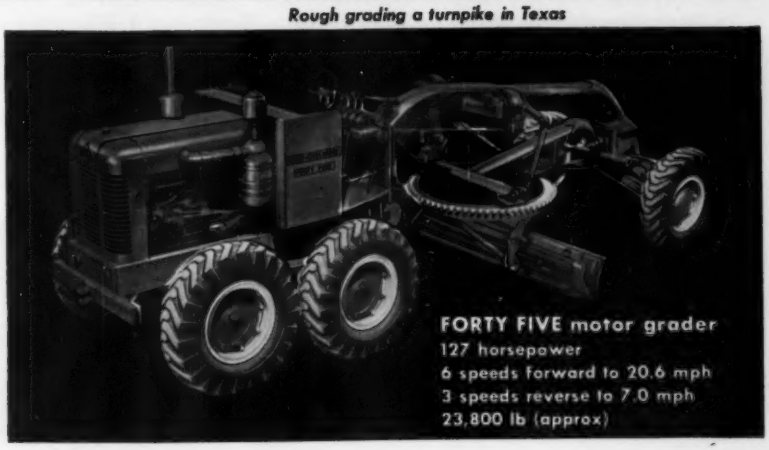
Removing rough spots on a haul road in Colorado

FORTY FIVE motor graders

Sloping a bank in Idaho

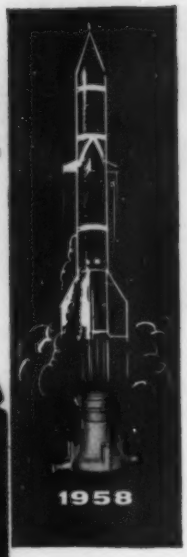
Rough grading a turnpike in Texas

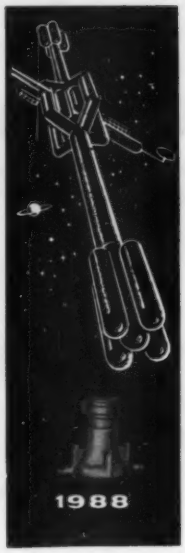
Your Allis-Chalmers dealer will arrange for you to try these and the many other features that make the Allis-Chalmers FORTY FIVE your best BIG grader buy. Tell him to set the date. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.



ROLL-AWAY is an Allis-Chalmers trademark.

The meter you buy today...





will it meet *1988* standards?

When buying new water meters, a most important question of cost is: "In 30 years will this meter be *scrapped,* or will it be rebuilt to *1988* standards at a fraction of the cost . . . ready for years more accurate service?"

Take a look at the *past* 30 years. Think how much you're saving *this* year on Trident meters installed back in 1928 . . . or even 30 years before that.

Under Trident's strict policy of interchangeability, all improved parts are designed to fit old Tridents too. These up-to-date Trident parts embody every thoroughly tested advancement known to metering science. Not only is repairing easy and economical, but also you actually modernize your Tridents as you go.

This has been a rigid Neptune policy for 60 years. ***Every design improvement now on our drawing boards will continue it.*** It's your best assurance that the Tridents you buy today will stay modern, earning maximum revenue for your water system . . at lowest cost . . for many years to come.

NEPTUNE METER COMPANY
19 West 50th Street • New York 20, N. Y.
NEPTUNE METERS, LTD.
1430 Lakeshore Rd. • Toronto 14, Ont.
Branch Offices in Principal American and Canadian Cities.

neptune
TRIDENT WATER METERS

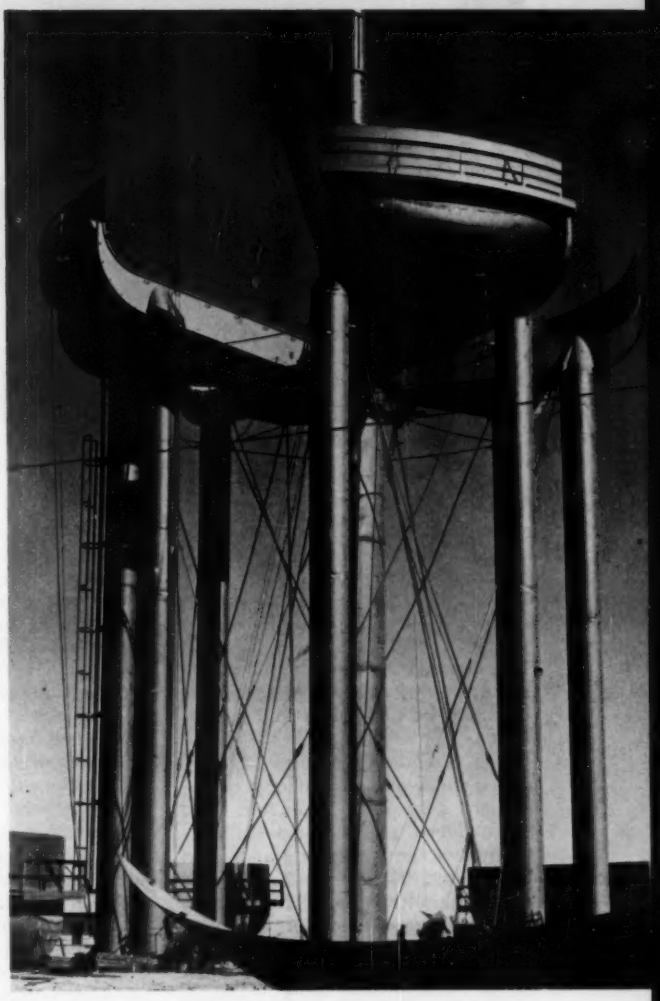
JULY 1959

The American City

It Took Three Elections

Persistent leadership by the city council overcame stubborn opposition to a badly needed water-improvement program

By DEL V. BRICK
Water Commissioner, Great Falls, Mont.



Erection of this 750,000-gallon tank in a new booster district eliminates one serious low pressure area. The overflow of the tank is 100 feet above ground elevation.

A much needed and long overdue water-improvement program promises relief by mid-summer to at least the most critical areas within the City of Great Falls. By the summer of 1960 we will have the water situation pretty well in hand —all because of a $2,600,000 expenditure that touches every part of the system from the raw-water pumps all the way to the distribution mains.

Our situation is not unlike that experienced by many other communities in recent years. We were forewarned as far back as 1952 that a $1,000,000 bond issue approved by the voters was woefully inadequate to meet the demands for water of the next few years. But it took years of effort and three elections finally to convince the voters that we could not continue to operate and carry out necessary maintenance, improvements and enlargements under a rate structure that was established back in 1928.

Bond Issue Fails

The 1952 report, submitted by the firm of Black and Veatch, Consulting Engineers, proved to be true in less than four years. In January 1956, the same firm submitted another report advocating universal metering and a $1,300,000 bond issue for necessary improvements consisting of a new booster district, additional mains and the purchase of meters. The issue failed by a 10 to 1 vote. This was most unfortunate for the city had started a large paving program and main extensions should have been accomplished ahead of the paving. The voters objected to universal metering despite our efforts to convince them of its many advantages.

In November 1956, Black & Veatch submitted a third report on water improvements — this one without universal metering. It called for a bond issue of $2,300,000. Again the issue failed—but only by a vote of 43% for and 57% against.

By this time the situation was far from good, for we were strug-

Start of a new 17,900-foot-long, 24-inch-diameter transmission main. The treatment plant can be seen at right.

gling with a facility designed to supply less than half the people it was now trying to serve. In early summer 1957, the administration appointed a Cross-Town Water Advisory Commission to the Mayor. This commission consisted of representatives of labor, business, the Chamber of Commerce and housewives.

The commission studied reports of the water department, city comptroller, consulting engineers, and fire underwriters, and personally investigated the pumping station and filter plant. They did not stop work after submitting their report, but continued until the recommendations were accepted by the public. Public education via radio, television, newspaper, club meetings and on-the-street discussions finally won out with the approval of a $2,600,000 bond issue on August 20, 1957, by a 3 to 2 vote. The urgent need for this vast program aroused the public from its former apathy.

Rate Increase

We again called upon Black & Veatch to make a study of water usage and costs of service, and allocated these costs in a new rate structure. The State Public Service Commission approved the new rates and they became effective July 1, 1958. The increase, averaging about 75%, was the first in Great Falls since 1928.

The city also engaged Kalman & Company of St. Paul, Minn. to handle the bonds, and $1,000,000 worth were sold in Otober 1958 at an interest rate of 3.63%. These are second lien revenue bonds, for the city still has $750,000 outstanding on the 1952 million dollar bond issue.

The program comprises nine basic contracts. Some have already been completed, others are under construction, and several are in the letting stage. The basic contracts are as follows:

Contract No. 1. Equipping two existing rapid sand filters, each with a 2.0 mgd capacity, by E. W. Bacharach Company. All filter control valves are Pratt butterfly hydraulically operated—the first in use at Great Falls. These filters have Leopold bottoms. This work is complete.

Contract No. 2. Erection of a 750,000-gallon steel tank by Chicago Bridge & Iron Co. This work was completed in November 1958, except for painting.

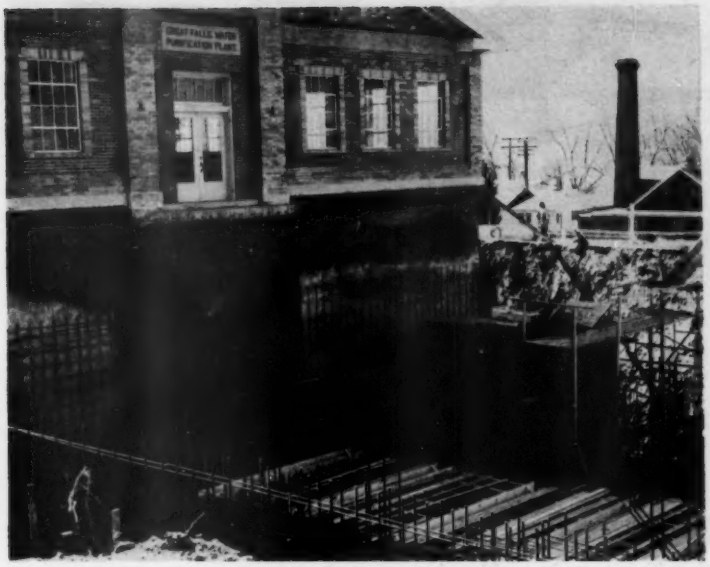
Contract No. 3. Replacement of a 24-inch raw-water line with a 30-inch line, utilizing 400 feet of American Double-X mechanical-joint cast-iron pipe. In addition, the National Water Main Cleaning Co. of New York cleaned approximately 500 feet of an existing 24-inch raw-water line. This work was completed in July 1958.

Contract No. 4. Two sections. First, the laying of 17,900 feet of 24-inch pipe plus appurtenance work scheduled for completion by June 1, 1959; and second, the laying of 7,750 feet of 20-inch and 400 feet of 12-inch pipe completed and placed into service December 24, 1958. This was all mechanical-joint cast-iron pipe purchased by the city from Pacific States Cast Iron Pipe Co. and laid by contract.

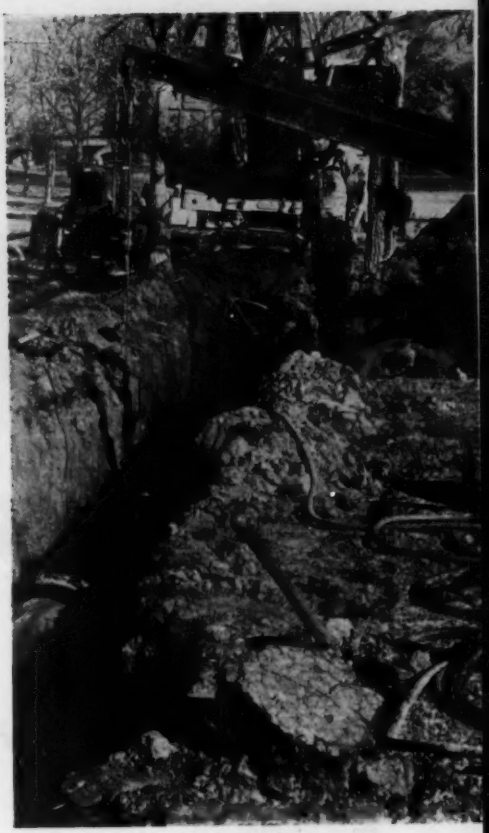
Contract No. 5. Construction of a booster station with three Allis-Chalmers pumps of 4.3-mgd capacity each, plus provision for a fourth unit to be installed when needed. They presently have 150 hp motors but are designed to accommodate 250-hp motors with appropriate changes in impellers as needed. The station also includes a Fischer & Porter automatically controlled chlorinator for post chlorination, since it is located 18,000 feet from the water plant and is some 184 feet higher in elevation. The building design fits in with the neighborhood architecture—concrete block and brick finish with modernistic lines.

Contract No. 6. Construction of elevated tank footings.

Contract No. 7. Five sections. This consists of an addition to the filter building to house four 2-mgd filters equipped with Leopold bottoms and with Pratt hydraulic butterfly valves; a 300,000-gallon clearwell changing two existing sedimentation basins to slow-mix flocculation; a new clarification basin with Link-Belt flocculation and sludge-removal equipment; and the extension of head house with a three-story addition. The basement will house 25 1-ton chlo-



Four new filters add another 8 mgd to the filtration capacity of the Great Falls water system.



The contractor used a well-point system to overcome successfully a very high water table—approximately three feet below ground surface. Here a 20-inch line is being laid through a golf course.

rine cylinders, the first floor will house new laboratory facilities, chlorine feed equipment, and locker room facilities for employees. The third floor will serve as a chemical storage area and transformer vault for the power supply. This work is now under construction.

To Be Awarded

Contract No. 8. The addition of one 1,000-hp, 10,000- to 14,000-gpm high service pump and one 250-hp, 11,200-gpm low service pump plus related work. We will award this contract about July 1, 1959.

Contract No. 9. Section I, additions to the distribution system consisting of about 11,900 feet of main from 8 inches to 20 inches in size. Other sections of this program will be let in several contracts during the year.

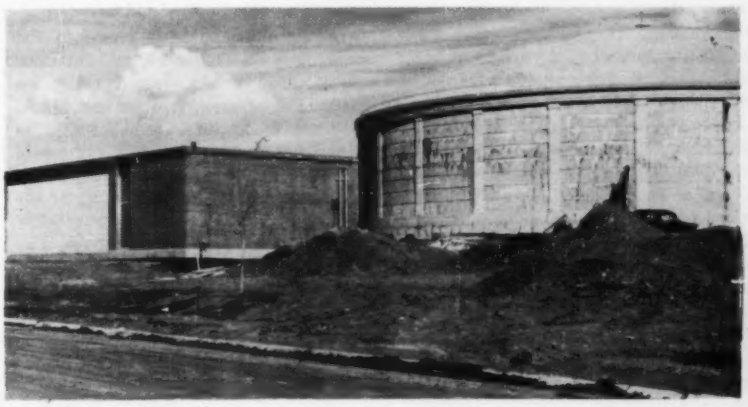
Great Falls obtains its water from the Missouri River. Fortunately since the intakes from the river are adequate for the foreseeable future, money did not have to be spent for an additional supply.

At the start of this program, we could treat, filter and pump 22 mgd and had storage capacity for 10,250,000 gallons—all to serve a community of 63,000 persons.

Recent records show the inadequacy of this capacity. In 1954 we had a maximum hourly use of 38 mgd. Last year during the irrigation season our peak hourly capacity approached 44 mgd—and this with several extremely low-pressure areas. Had the water been available this figure would have been exceeded greatly.

When our present project is complete we will have added another 12 mgd to our nominal filtration capacity, another 1,050,000 gallons for storage, and added another pressure plane (served by the new booster station). In addition, by strengthening the distribution system we will have removed the several dangerous low pressure areas.

True enough, Great Falls citizens will be paying more for water—but we have taken a big step forward toward solving our problems. Better service will also lower the customers' blood pressure and everyone's fire insurance rate; and will go a long way toward maintaining our position as the largest city in Montana.



This booster station, constructed adjacent to a 4,500,000-gallon concrete reservoir, puts an end to low pressures in a major distribution area.

The "Mieder" machine traverses settling tank with sweep in position for the scraping cycle. Speed during this operation is 4 feet per minute.

A Different Way to Collect Sludge

Track-mounted scraper proves itself with 22 years of service in New Jersey installation; new units are counterparts

The Joint Meeting, a regional sewerage organization serving 11 municipalities in Essex and Union Counties, N. J., placed the first pair of "Mieder-type" traveling-bridge sludge collectors in this country into operation in 1937.

German Invention

Invented by the late Dr. Karl Mieder of Leipsig, Germany, the original scraper-skimmer machines were installed under a 1930 contract with the Link-Belt Company. They have given outstanding performance with low maintenance and repair costs, coupled with significant operational advantages. So successful have they been that the Joint Meeting recently installed two improved Mieder units supplied by the Komline-Sanderson Engineering Corp. of Peapack, N. J. for its sewage purification plant located at Elizabeth, N. J.

The Elizabeth plant provides primary treatment only, collecting screenings by means of a bar rack and fine bar screens and removing grit mechanically for use as fill material in adjacent meadow lands. Primary sedimentation in four large rectangular settling tanks gives detention periods averaging two to three hours. The settled sludge, after scraping, is pumped by means of plunger pumps to two circular, 70-foot-diameter concrete sludge-storage tanks. These tanks permit concentration of 5%-6% solids down to between 8% and 11% by controlled decantation and other means. Scum is removed by pneumatic sewage ejectors and is combined with primary sludge in storage.

Decanted liquor is returned to the influent sewage channel. About once every three weeks, stored sludge is pumped 4,400 feet through a 24-inch-diameter force main to a dock at the waterfront, loaded on a barge of 6,000-ton capacity. The sludge is then towed to a designated point for disposal far out at sea.

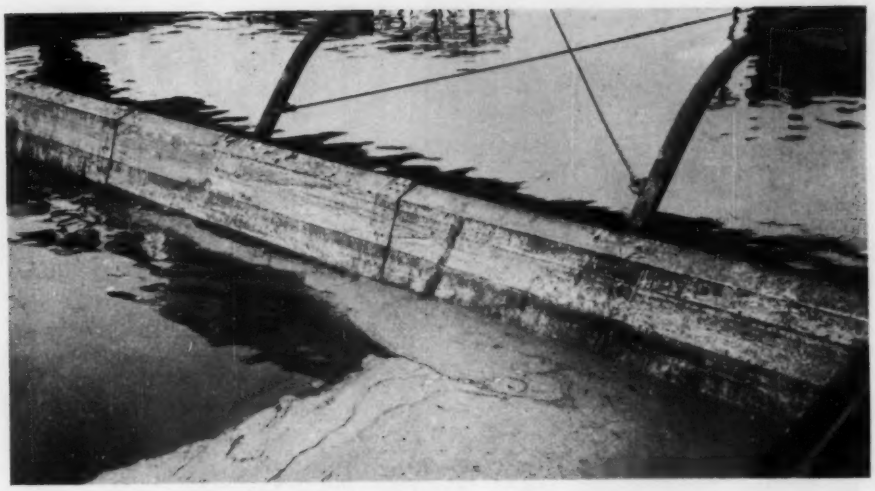
First Installation

When the first two Mieder-type traveling sludge collectors were installed, they could be transferred from one tank to another by means of transfer trucks on the machines to provide desired operation in working alternate tanks. With two settling tanks in service and an average flow rate in 1957 of 46,580,000 gallons per day, average detention time in the tanks amounted to 1.8 hours.

All four settling tanks are 75 feet in width and 280 feet long, with a water-depth range of from 10 to 11 feet. Cross-collector mechanisms are located at the influent end of the tanks and just downstream from perforated influent-distribution equalizing baffles.

New Tanks Needed

The average removal of suspended solids during 1957 was 55.5% and of settleable solids 87.2%. Fresh sludge pumped to storage tanks averaged 6.45% solids. Prior to 1957, performance of the rectangular settling tanks of the Joint Meeting plant has been of the highest quality. However, increased sewage from a new pumping station serving the City of Elizabeth during 1957 caused a sharp drop in the removal of biochemical oxygen demand and sewage solids. To improve



The sweep is elevated to skimming position on the return trip. During the skim cycle, machine approaches effluent end of the tank at 10 fpm.

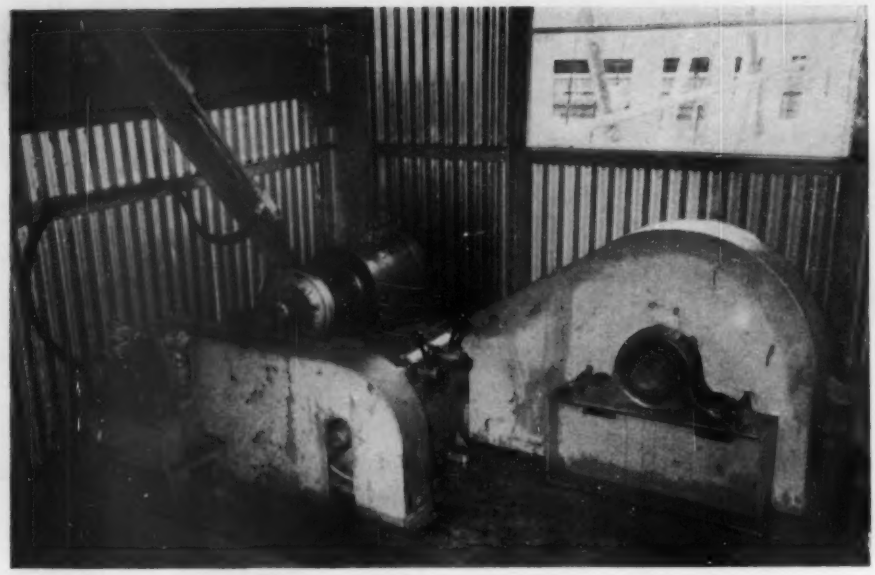
For fast traverse, for adjustments or replacement of pure gum rubber scraping edge, sweep can be raised clear of the water at any time.

operations it was necessary to place three—or even four—settling tanks in use instead of the usual two, and the Joint Meeting was faced with the problem of finding a satisfactory manufacturer and proper equipment to supplement the two original Mieder machines installed at Elizabeth. From experience, they were convinced "that nothing on the market would do as good a job as the Mieder collectors already installed at their plant." On the basis of their reliability and extensive experience in sanitary sewage handling equipment, Komline-Sanderson was asked to submit a bid on the two new machines. Their bid was successful and the two machines subsequently provided the utmost satisfaction in operation.

The new Mieder sludge-scraping machines are the traveling-bridge type, which straddle the rectangular concrete settling tanks. The machines are four-wheel-drive, self-propelled carriages driven by electric motor followed by a fluid coupling, electric solenoid brake, and a gear transmission box, with necessary sheaves and chains to drive the unit. Travel is provided by a 7½-hp electric motor which drives one main shaft and a chain-and-sprocket combination under the machine to transmit power to the four wheels. The machine traverses from one end of the tank to the other on standard section rails laid alongside each tank. The scraping blade is continuous and is supported from the main bridge structure by six S-shaped sweep arms, pivoted near the lower chord of the Pratt trusses of the bridge structure. The blades can be lowered or elevated for each operation of sludge scraping, skimming, or traversing. The blade is approximately 3 feet high and 75 feet in width. The bottom of the blade is fitted with a strip of pure gum rubber, ½-inch thick by 6 inches wide. The rubber strip acts like a windshield-wiper squeegee against the tank floor during the sludge scraping cycle. The weight of the blade is carried on steel wearing shoes which slide along the tops of steel rails. These rails are embedded in the concrete floor of each tank.

Operation

In the scraping operation, the blade is lowered to the bottom of the tank at the effluent end and moves at the rate of 4 feet per minute toward the influent end. During this sludge scraping cycle, there are no eddies or rolling set up in the settling sewage. As the Mieder machine approaches the influent end of the tank, limit switches automatically stop the forward movement. In addition to limit



Simplified control and drive units occupy only a small portion of the cab of the Mieder machine. Electric motor is hydraulically coupled.

switches, there are rail stops located at the ends of the tanks as safety features. With the machine at the influent end, it rests at the end of the tank for a predetermined time so that the collected sludge will fall into the cross-collector trough.

At the completion of the scraping and waiting cycle, the blade is elevated until only the lower edge is below the surface of the liquid and in such a position, the machine is reversed toward the effluent end of the tank, providing a skimming operation. The skimming speed is at the rate of 10 ft. per minute. The blade can be elevated completely out of the water and above the tank wall level, and may thereby traverse in either direction at a speed of 60 feet per minute.

Automatic Control

Each of the machines is equipped with two-station, automatic and manual control, with an electric control panel mounted in the cab of the unit and an auxiliary control panel mounted at the edge of the bridge walk-way so that an operator needs only to push a button as he walks by the machine, and the machine will automatically go into operation.

Motivating power for the sludge scraping, skimming, or traversing cycles is through a 7½-hp motor. The raising and lowering of the blade is accomplished by means of a 3-hp motor with its attendent fluid coupling, solenoid brake, and gear reduction units. Power for complete operating cycles is transmitted through a third-rail current pick-up and sliding contact shoes on the end of the tanks. The sliding contact shoes can be pivoted away from the contact rails at will.

The Joint Meeting found that during 22 years of service, the original Mieder machines had cost a total of $180 in repair and parts replacement. This compared with chain and flight scraper replacement, performed on regular four-to-seven-year schedules, is negligible. Breakdowns with the Mieder machines have been few and far between and even when they have occurred, adjustments have been made "in the dry" simply by raising the sweep or blade clear of the water and doing the work without draining the tank or placing it out of service. It is certain that the simplified control and drive mechanism and the improved drive train on the new units will prove even more satisfactory than the old. The steady vibration-free movement of the new machines tends to indicate that they will be more effective than the original old ones.

Questions and Answers

1. *Since chain and flight operation is virtually unattended, isn't there an operational cost in the Mieder system that might offset the savings in replacement?*

The answer seems to be "only slight" under normal use. Once the automatic button is pushed, the machine is on its own for each phase of the cycle. Completely automatic timed-cycle operation could be achieved if continuous collections were desired. Since the sludge from the Elizabeth plant is stored, and subsequently pumped into barges and disposed of at sea, a completely continuous sludge collecting operation seemed unnecessary.

2. *Since there is only one sweep doing the same work as many blades of a flight scraper installation, isn't there a tendency for sludge to pile up and flow over the Mieder sweep?*

There is no evidence that sludge piles up in front of the sweep. On the contrary, material flattens out in front of the sweep in a continuous forward motion. Experiments conducted by William F. Farrer, Ltd. over a period of 14 years show that sludge was removed by this displacement effect in tanks as long as 400 feet. The forward scraping speeds of the blades must be determined by the settling characteristics of the sludge in each tank.

3. *In the event of serious stoppage and equipment shutdown, would it not be necessary to close down the tank and drain it, as is customary with chain and flight collectors to avoid damage to the machine while scraping accumulated sludge?*

According to Edward P. Decher, secretary of the Joint Meeting, research and experiments have proved that accumulated sludge of substantial blanket thickness can be scraped clear by operation of the Mieder machine in short segments of the tank length, starting at the influent end of the tank. Any portion of the tank can be scraped clean by means of pushing buttons to lower and elevate the blade at any desired spot.

Husky diesel unit is a multi-purpose digging, loading, backfilling rig that works mostly on water and sewer lines.

Versatility Is the Word

Greensboro, N. C. maintains fleet of five tractors in three sizes to perform a variety of operations in each power class

10-dhp unit is used for grooming of parks, cemeteries, recreation areas.

By **OKA T. HESTER**
Park & Recreation Superintendent
Greensboro, N. C.

Every tractor in the Greensboro, N. C. public works fleet is a versatile performer. City growth has demanded tractors with multi-use accessories to cope with varied land maintenance problems and expansion.

Every equipment unit has its capabilities—and limitations—by virtue of design and engineered attachments. A small town usually will buy an intermediate-weight, mid-range-horsepower, medium-size tractor unit to take advantage of the greatest one-unit versatility that hard-earned tax dollars can buy.

The large city, with its extended work routes, larger areas, and bulging population, turns to whole fleets of single-purpose, full-time units, permanently assigned to specific jobs.

But Greensboro, like so many medium-sized cities, practices middle-of-the-road purchasing. Large enough to need fleet performance, but too small to apply one tractor to a single full-time job, the city buys its tractors by its own standard—"most constant varied use for a minimum-unit fleet."

Units that most nearly approach one-purpose performance are two 10-dhp (drawbar-horsepower) International Cub Lo-Boy tractors that can handle a variety of jobs with an assortment of matched equipment for landscaping and maintaining the many public parks in Greensboro. The low-silhouette units, with a 2.3-to-6.9 mph speed range and a 7½-foot turning radius, normally carry a center-mounted rotary mower for grooming parks, recreation areas and cemeteries.

Two International 130 tractors in the 20-dhp class are normally equipped with side-mounted cutter-bar mowers. They are used primarily for high-capacity mowing jobs under difficult conditions in unimproved areas, on roadside banks and shoulders, in parks and playgrounds. But they often are assigned to other areas important to the upkeep of Greensboro.

The largest of the five units, an International 350 diesel, equipped with backhoe and front-mounted hydraulic loader, serves primarily as a multi-purpose machine in the water and sewer departments. With 40-dhp, the tractor lays many miles of new lateral water and sewer lines, maintains existing lines and installs sections of main that are too short for general contract operation.

But the Model 350, like the others, does some job hopping. It is called for whenever a job demands digging, loading or backfilling.

Curb and gutter and paving was done by contract. Here a workman uses an Adams motor grader to place the base material.

A New Paving Policy

. . . and street tree planning program in Ahoskie, N. C., provided better, safer streets

By **J. E. HULSE, Jr.**
Town Manager
Ahoskie, N. C.

Besides being the largest paving program in the history of the town, our present project also represents several firsts. This is the first time Ahoskie is using a plant-mix asphalt for the surface course and it is the first paving program since we decided to pave no more streets without installing curb and gutter as well as the necessary drainage facilities.

Fortunately, we are not too late in adopting our paving policy, for, of the 20.34 miles of streets within the community, only 9.87 miles are paved. Our present program calls for the paving of 3½ miles at a cost of some $230,000. Had we sufficient funds, the program would have totaled 5.73 miles—all petitioned for by the abutting property owners.

Since Ahoskie is a small community (population about 5,500) we rely heavily on contract procedures for most of our new construction. Our consultants, Rivers and Rivers of Greenville, N. C., design the paving and necessary drainage facilities, set all grades, inspect the work and carry it to completion. Two separate contracts cover actual construction. One covers curb and gutter work, drainage and base preparation. The other covers application of the surface course.

Most of the streets have a minimum width of 31 feet but the industrial streets and truck routes are 37 feet wide—all measurements from back of curb to back of curb. Specifications call for concrete curb and gutter, a 6-inch sand, clay, gravel base well compacted, and 2 inches of hot plant-mix bituminous concrete. One truck route will have a heavier base with the addition of crushed stone. Formerly, most of our pavement consisted of the surface treatment type without proper provision of drainage facilities.

The program comprises about 40,000 lineal feet of curb and gutter and some 54,000 square yards of surfacing.

Financing

The town and the property owners share the cost of paving. The latter pay the full cost of curb and gutter and one-third of the cost of the base and surface course. The town pays for the balance of the

Town employees using a town-owned Galion motor grader lower a small water line in advance of the paving program. Note curb and gutter already in place.

Many of the streets required considerable excavation as shown in this intersection view.

pavement, all drainage work and all work done in the intersections.

We obtained the necessary funds through a $210,000 general obligation bond issue sold at a 3.73% interest rate. The balance came from the general fund.

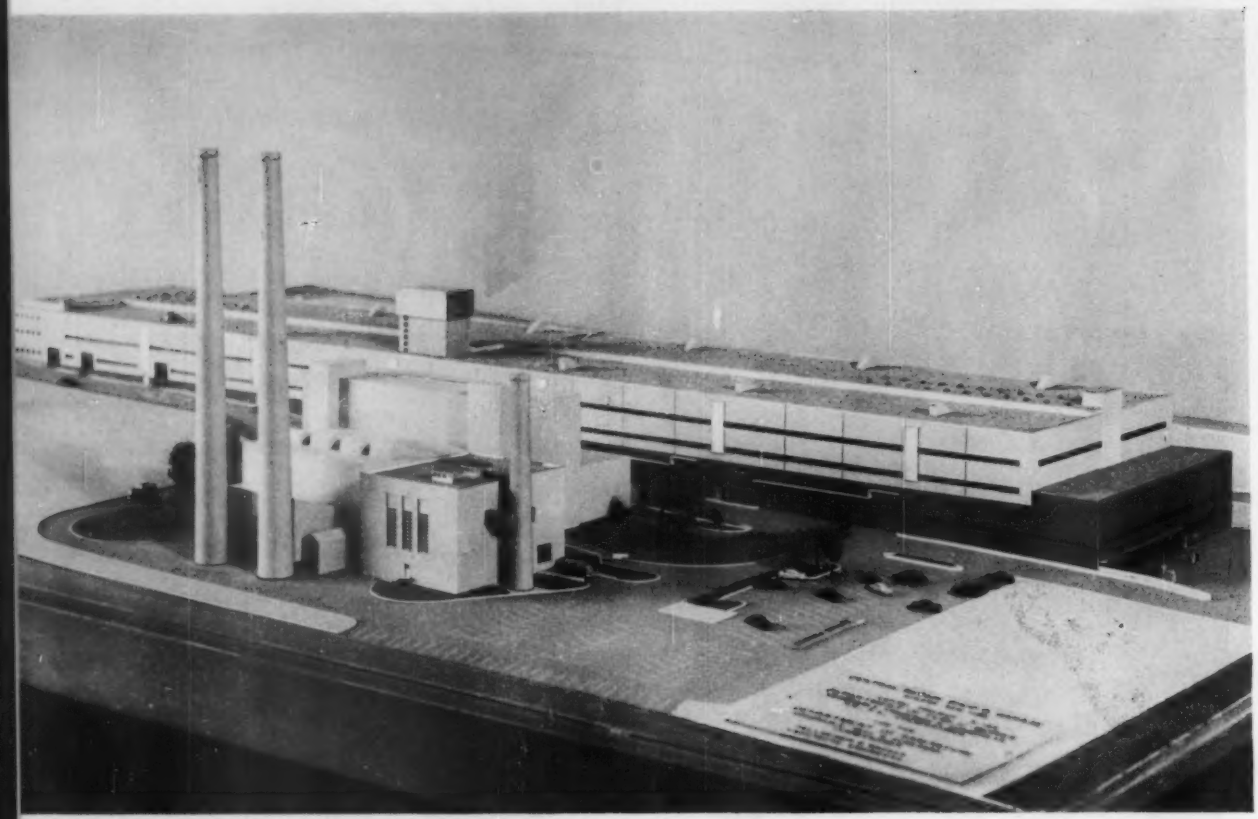
Property owners have the choice of paying their entire assessment within 30 days of notice at no interest or placing it on a 10-year program at 6% interest on the unpaid balance. They may, however, pay the balance at any time and thus save further interest charges.

We are also working on a program to clear intersections of large trees that block driver vision. Although completely separate from the paving program, it does relate to our street system and general maintenance program.

Blind corners have caused a number of minor accidents—one involving the writer—and brought the situation to a head. Our solution to the problem took the form of a street tree planting ordinance and a voluntary program for the removal of street trees where they endanger children, pedestrians and drivers. Street trees are those planted between the property line and the roadway. All property owners received a mimeographed booklet, well illustrated with sketches, to explain the need for removing existing trees where they caused dangerous conditions and also explaining the new plan for planting trees inside the property line.

We were fortunate in that the Virginia Electric and Power Company had a tree-trimming crew in town at the time our program was launched. The company agreed to remove any tree in the street right-of-way and under their lines without cost to the city. Using the authority granted under the new ordinance all trees at the corners endangering the traffic were removed. We also complied with requests to remove some trees in the curb lawn within the block. City forces hauled away the debris. All told some 50 trees, mostly large elms, came down in this manner. Except where the trees caused extreme danger, they were removed only with the prior consent of the individual property owners concerned.

Ahoskie's permanent paving program plus control of planting within the street right-of-way will continue to benefit every citizen within the community.



A model of New York City Department of Sanitation Center. The proposed waste heat recovery plant (foreground) will utilize heat from a recently enlarged and rehabilitated incinerator to provide space for utility heating for the the huge repair shop (background).

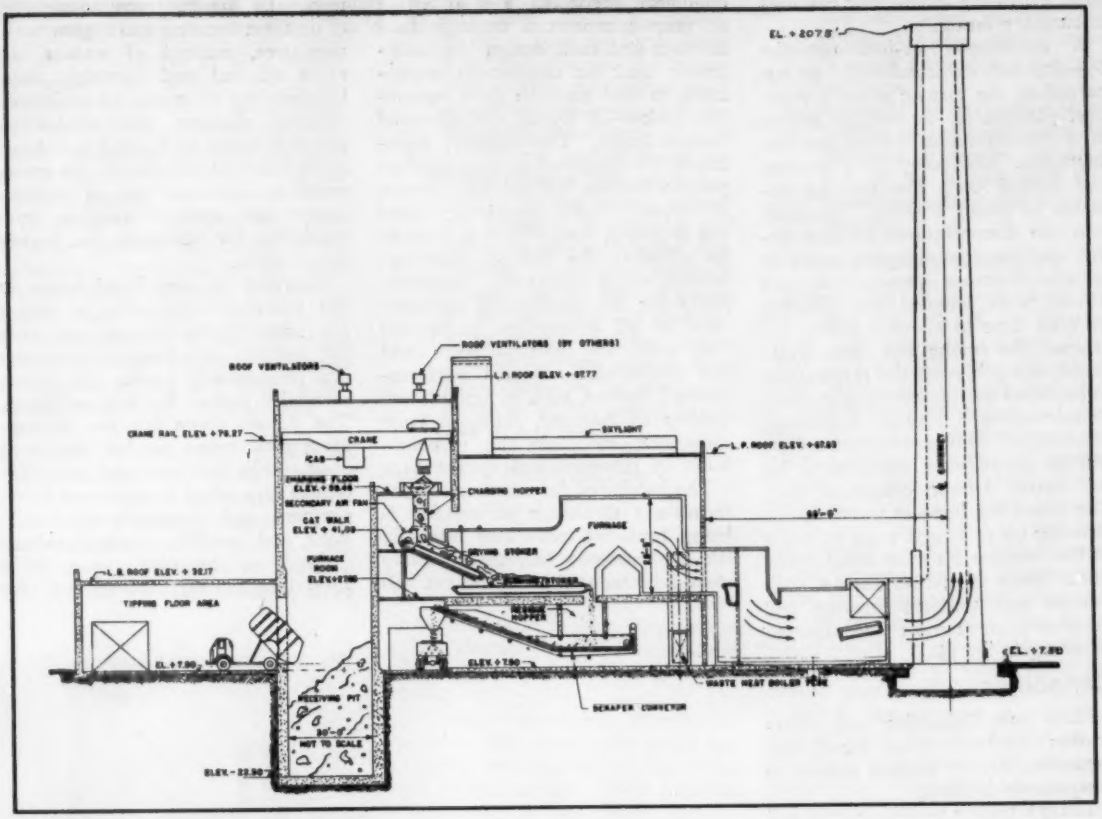
Refuse Incineration—

Trends And Developments

By **CASIMIR A. ROGUS**
Director of Engineering
Department of Sanitation, New York City

Recent nation-wide surveys show that, in the larger cities, the disposal of municipal refuse (the solid wastes of a community) by incineration is displacing alternate disposal methods. This gain is due in part to the progressive depletion of suitable sanitary landfill sites. In a large measure, however, it is due to the last decade's accelerated improvements in design which have produced increased efficiencies, reduced costs and enabled relatively nuisance-free operations. The modern incinerator can now be built and operated centrally to the tributary collection areas. The attendant reduced haulage costs, combined with the economies in operation of today's mechanized plants, places incineration in direct competition with sanitary landfill. Where the extensive lands required for the latter are distant, costly or of limited availability, incineration has the advantage.

Much of this has been covered by numerous reports and articles, but



Longitudinal section through a large, modern continuous type incinerator.

mostly on a piecemeal basis. The purpose of this article is to highlight and sum up today's changed conditions, the major improvements, the latest practices and the current trends in design.

Refuse

The quantity and character of municipal refuse has changed significantly within the last 20 years. The garbage and ash (northerly states) content dropped by about 40% and 70% respectively, but the rubbish output increased to such a degree that the over-all quantity of refuse produced is on the increase. It ranges from 1,100 to 1,700 pounds per capita per year with a median weight of 1,400. The amount collected for disposal, however, is but 70% to 80% of that produced, since self-disposal by industry, commercial establishments and large apartment house developments is on the increase for reasons of economy and convenience.

It is pertinent to note that the reduction in the garbage content with its moisture burden and the ever-increasing percentage of waxed papers, synthetic wrappings and some highly flammable plastics has progressively raised the average thermal value of refuse—on the as-collected basis—from last decade's 3,500 BTU per pound to today's 4,500 BTU per pound.

These trends in increased quantities and higher thermal values must be recognized. They will vary seasonally, geographically and annually. Sound basic data thereon for a specific design can be best obtained only through field surveys and proper analyses in the community involved.

Combined Collections

The heterogeneous nature of refuse has mandated in the past the segregation of non-combustibles and other non-desirable components to avoid fouling the furnace operations. Separation took place at the source through separate collections or at the plant by picking. The latest furnaces, however, can handle without difficulty or loss in efficiency all materials as collected. Since the design of the major incinerator components such as the furnace, combustion and settlement chambers, flues and exhaust stacks is primarily governed by the combustible portions of the refuse, the presence of non-combustibles will have little effect on either construction costs or operating problems. Savings in the otherwise required separate collections, in their enforcement, and in the need for multiple household containers, far outweighs the added cost, because of non-separation, in the materials-handling components (storage pits, cranes, chutes, grates, and conveyors). Accordingly, the latest incinerators process combined refuse, except for the prior removal of such overlarge objects as bed springs, sofas, stoves and refrigerators. These are either collected separately on demand or are sorted out at the incinerator for dis-

posal (with the incinerator residue) in sanitary landfills.

A continuous 24-hour-per-day, 5½-day-per-week schedule is superseding the former general practice, particularly in smaller plants, of a discontinuous 8-hour-per-day operation. Obviously the plant size and capital costs are thereby reduced to about a third. In addition the discontinuous furnace firing, and the accompanying quenching and cleansing operations at each 8-hour shift reduced the effective burning time to about 5 hours, increased the smoke and other nuisances, and subjected the refractories to pointless cooling cycles and shock temperatures. Round - the - clock burning, of course, requires ample storage capacity to compensate for the usual 8-hour collection day. The trend has been to increase this capacity up to 24 and even 32 hours of the furnace burning capabilities. These large capacities assure continuous and uniform burning and develop a more even fuel through recasting in the pit.

Capacities

Many past difficulties with incineration stemmed from insufficient capacities and/or designs geared to competitive bidding.

Today's higher refuse outputs and more complete collections require the use of a capacity unit ranging from 3.3 to 4.5 lbs. per capita per calendar day depending on local conditions. Adjusting this to the plant's 300 working days per year at an average actual operating rate of 85% of design capacity, we obtain a basic unit ranging from 4.7 to 6.5 lbs. per capita per operating day. This is a far cry from the former, rule of thumb, design unit of 2 to 2.5 lbs. per capita per calendar day.

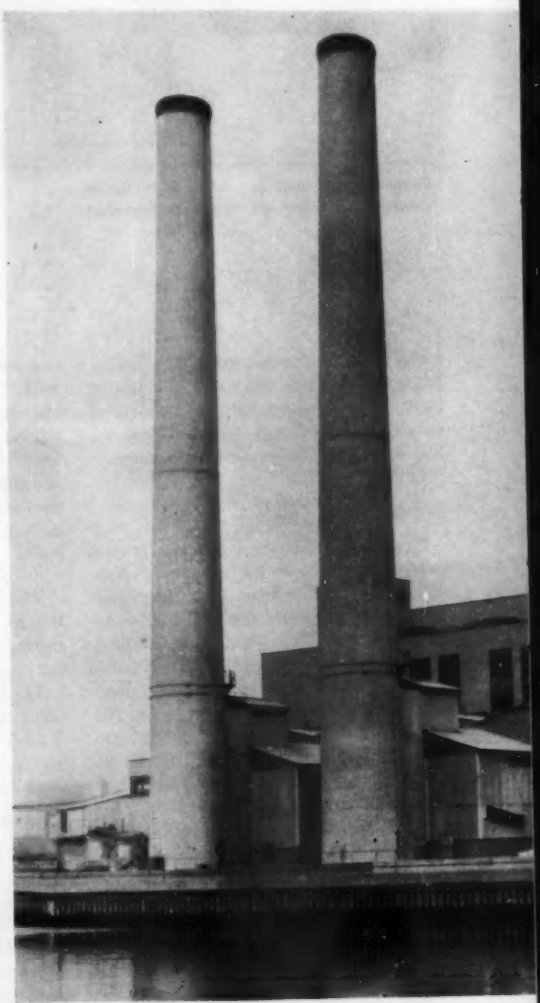
Another practice, now going into discard, called for a community to award the design and construction of an incinerator, for a specified tonnage and performance, to the lowest responsible bidder. Under the stress of this type of competition, incinerators were designed and built which would meet the specified performances, but only under ideal conditions and controls and under expert operation during the test period. Thereafter, under the normal conditions of varying amounts and types of refuse and in the absence of expert management and skilled operation, the same incinerator would burn much less refuse and create many more nuisances.

Today's designs are prepared by engineering specialists who arrive at proper capacities through field surveys and then design the incinerator and its component equipment to best perform their respective tasks—all within the allocated budget limits. The contract documents are prepared to permit competitive bidding throughout. Where, of necessity, some proprietary items are required, competition is secured by allowing the use of other approved equal products. Responsibility for the mechanical performance of all component parts still lies with the manufacturers and the contractor. Actual performances, however, such as amount and quality of burning, freedom from nuisances, etc., are the responsibility of designer and operator.

The batch-fed furnace with its intermittent discharge of residue is being replaced more and more by the continuously fed, mechanically stoked furnace with continuous ash removal. Its inherent advantages of uniform burning and higher temperatures, control of excess air, more efficient and thorough combustion, less odor and air pollution, reduced slagging and clinkering, and alleviation of damage to refractories are well recognized. Its economies in operation and in maintenance and greater freedom from nuisances far outweigh the higher initial costs.

Consider the cost breakdowns in the accompanying table in which are compared the average unit costs for modern, mechanized, continuous incinerators versus the older, manually stoked batch-type plants. The values given are for incinerators of the crane and bin type, with comparable buildings and other facilities, operating under same management and under similar conditions, and handling identical refuse.

Applying the unit values to a 1,000-ton-per-day incinerator, we



New York City's latest marine transfer station and 5,000-ton-per-week incinerator.

find that whereas the construction cost of the continuous type would be about $1,750,000 or 47% higher, the annual net savings would approximate $500,000. In addition, the thoroughness of burning, the stack emissions and the character of the residue are superior in the modern plants.

It should be noted at this point that the present high costs of the continuous type furnaces are being whittled down to about $3,500 per-ton-per-day (1958 cost index) through a number of design changes which, although based now only on incomplete testing and observations nevertheless appear sound, thus:

1. **The secondary combustion chambers are being replaced by enlarged primary chambers and a more judicious use of overfire air. The increased volume and combustion space of larger primary chambers, aided by a more uniform distribution of air, reduces the flame carry-over and destroys the particulate matter and noxious gases —functions now assigned to the secondary chambers.**
2. **The inclined ignition grates are being replaced with single horizontal burning grates, extended, however, to maintain the same effective grate area. The feeding, mixing and tumbling functions of the inclined grates do not seem to be as essential as deemed heretofore while their ignition and burning functions appear to be adequately handled by the single grate and at less cost.**

Auxiliary Fuel Burners

The increased thermal values of present-day refuse, even with garbage and swill included, does not require added heat except when the refuse has been saturated (rain or quenching of fires in the storage pit). Burner installations in the side walls have not been too successful.

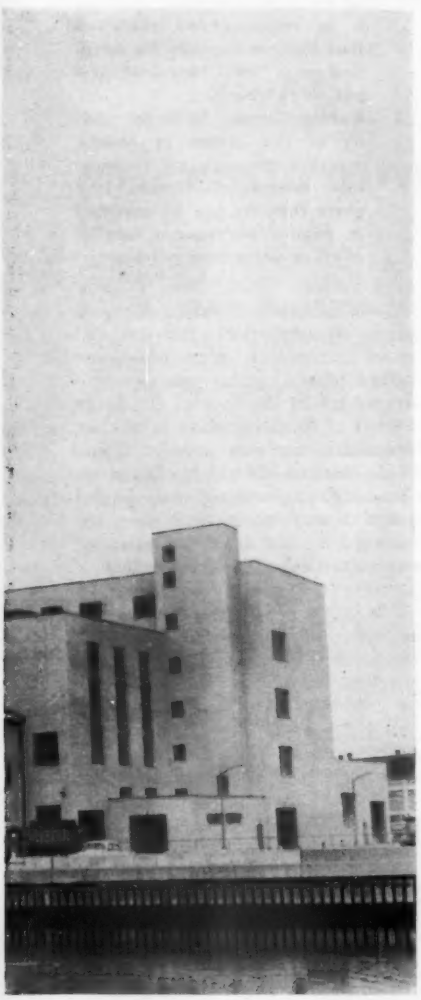
A more promising installation mounts a kiln type, wide angle retractable jet burner on the front wall of the furnace. With suitable adjustments to the flame pattern this kind of unit will accomplish the following:

1. **A short, wide angled, high temperature flame to rapidly build up furnace temperatures and thus improve quality and speed of starting operations—a possible increase of 5 hours in effective burning time.**
2. **A longer, 60° to 90° cone of moderate temperature to maintain radiant heat in refractories during shut-down periods so as to avoid damaging shock temperatures.**
3. **A long (5' to 10') narrow jet of medium temperature to dry the saturated refuse at the inlet end of the furnace and thus speed up ignition and promote burning.**

Waste Heat Utilization

Incineration of refuse uses up from 33% to 67% of its thermal value. The excess, ranging from 1,000 to 3,000 BTU per pound, is either discharged through the stack or used in varying degrees to preheat secondary combustion air, space heating, drying of sewage sludge, or for generating power. Relatively few waste-heat recovery plants have been built or operated successfully to date. Today's emphasis, however, on municipal economies demands a sound investigation of this potential. This is attested to by a recent upsurge in the installation of waste heat recovery plants. One of the largest is being designed for the City of New York. This $1,500,000 plant, adjoining a modern 1,000-ton-per-day refuse incinerator is to be used for space heating 13,300,000 cubic feet, supplying hot water for 1,500 personnel, and steam for truck washing—all for the nearby new Central Repair Shop and Garages. It is conservatively estimated that the average production will be 1.25 lbs. of steam per pound of refuse to a total of 83,000 lbs. of steam per hour when the incinerator is operating at 80% of design capacity.

With today's use of mechanically loaded compaction type refuse col-



Cost of Refuse Disposal by Incineration
(Unit Cost in Dollars per Ton of Refuse Destroyed—1958 Cost Index)

	Average of Three Continuous-type Modern, Mechanized Incinerators	*Average of Four Batch-type Manually Stoked Incinerators*
Total Cost Per Ton-per-Day of Design Capacity (exclusive of land)	$5,500.00	$3,750.00
Unit Costs—		
Direct Operating Costs (exclusive residue disposal)	$2.40	$4.20
Maintenance and Repair Costs	1.05	1.05
Administration and Supervision	.50	.65
Pension Costs	.60	.90
Fuel and Utilities	.05	.05
Amortization	.95	.65
Total Unit Costs	$5.55	$7.50

lection trucks, shredding of refuse prior to processing through the furnaces has become unnecessary. Conversely, the satisfactory disposal of construction and demolition lumber, large tree limbs, and similar bulky timber has become a troublesome, costly and hazardous problem to the larger municipalities. Although the amounts of these materials vary seasonally and annually, it is conservatively estimated that the total annual output approximates 1/5 cubic feet per capita. Their burning, on an "as-received" basis, at landfills creates smoke nuisances and fire hazards. Their burning in incinerator furnaces requires pre-cutting and pre-shredding. Large, swing-hammer type crushers or hoggers best pre-shed the larger sized tree limbs and waste lumber with its nails, spikes and miscellaneous hardware. Some of the newest incinerators have been so equipped and report satisfactory performance. The odd lengths of wood, up to 12 feet, are conveyed into the crusher where the swinging hammers, rotating at about 800 rpm, splinter the wood against the stationary cutting bars to a maximum size of 2 inches or less. The crushed material drops onto conveyors and thence into the storage pit for subsequent feeding into the furnaces with the other refuse. The intermittent shredding operation can be timed to use the splintered wood as an auxiliary fuel.

Truck Scales

Sound management of incinerators is based on sound performance data. The modern truck scale fills this need to a great degree by its semi-automatic recording of the critical statistics. Several variants of such modern scales are in being. One of the most complete installations is now nearing completion in the City of New York. The first of the twenty-nine units contracted for has been successfully tested and accepted—the remainder to follow shortly. This system was described in an article in THE AMERICAN CITY, April 1957, page 128.

The importance of controlling stack emissions is emphasized when one considers that their total output amounts to from 50% to 90% by weight of the material introduced (refuse, moisture and combustion air). Today's emphasis on air pollution has resulted in substantial improvements in controlling emission from incinerator stacks and in developing more realistic standards of permissible emissions. To trap the particulate matter (about 1% by dry weight of total ash produced) designers use mechanical separators, electrical precipitators, water scrubbers and large settlement chambers. Each of these has its peculiar well-known merits and disadvantages. One of the most promising installations, recently developed through scaled pilot tests, comprises a settlement chamber with skimmer baffles at the inlet and at the outlet ends imparting a non-turbulent circuitous path for the air stream and enabling settlement by centrifugal precipitation. The particulate matter impinges on the wet bottom, promoting better settlement and preventing re-entrainment. A battery of water sprays slurries the separated fly ash into a sump whence it is pumped to circular settling tanks. The clarified effluent is recirculated.

The present permissible emission standards, originally developed for burning homogeneous fuels, are unrealistic for refuse burning. These inflexible amounts fail to take into account such local variants as:

1. **extent of existing pollution by other sources**
2. **relative tolerance limits**
3. **prevailing natural capabilities of absorption and diffusion**
4. **meteorological conditions and seasonal changes**

Furthermore, the present-day instrumentation and methods of measurement lack standardization. In recognition of the above, the American Public Works Association recently initiated a nation-wide research project to develop, in cooperation with other agencies, appropriate tests and standards.

Ratings

Sound evaluation of comparative designs and performances are almost impossible with the presently used units and yardsticks. The following items in particular apply:

1. ***Amounts of Material*: Since density of refuse varies locally, daily, seasonally, geographically and with type of collection equipment used, the quantities should be reported on a weight basis. The ton (2,000 lbs.) is recommended.**
2. ***Type of Refuse*: Since collection and disposal practices vary, the proportions of materials destroyed (burned) will vary from near 100% for light combustible rubbish to as little as 65% for some mixed refuse. Comparisons of performances and costs based on the total refuse handled will obviously lead to false conclusions and certainly will not be indicative of relative efficiencies. It is therefore recommended that all reporting should be based on the "Total Refuse Destroyed" (tons of refuse put-in minus tons of dry residue put-out).**
3. ***Incinerator Capacity*: Since incinerators are operated on one, two or three shifts per day, and for 5, 5½, or 6 days per week, and since frequently at least one furnace is shut down for repairs, the reporting of a plant's capacity on the customary "ton-per-day" basis may be misleading. It is recommended therefore that the plant capacity be specified on a "total tons destroyed per week" basis.**
4. ***Furnace Capacity*: Since the effectiveness of a furnace is greatly dependent on the heat radiated from the refractories, its production is greatly affected by shutdowns and coolings. It is recommended therefore that furnace capacity be specified on a "total tons destroyed per week" basis.**
5. ***Stoking Grates*: Since the ability of the grates to handle materials depends on the average instantaneous rate, the grate capacity can be specified in pounds per square foot of effective grate area per hour.**

Much of present-day design is based on empirical factors and values extrapolated from other operating plants. The use of such parameters in the face of the large number of local variables is neither dependable nor economical. Competent designs should be based on a thorough engineering analysis and design of each component part, including heat and mass balances for several critical sets of conditions.

Operator feeds, records and removes documents from this Burroughs microfilm recorder.

Microfilming Public Information

By **ELBERT S. SMITH**
Auditor of Public Accounts
State of Illinois
Springfield, Ill.

Our records reproduction system in 18 months has become an operation said by some authorities to be one of the biggest and best in the country.

This type of program serves three important purposes: 1) Reflects the citizens' inherent right of free access to state records; 2) saves tax money, and 3) provides safeguards for irreplaceable government records that show how tax money was spent.

In this office the records reproduction program consists of microfilming the original records of expenditures of every state agency. These records include the warrants (or checks) and the vouchers, which are the documents sent to the Auditor's office authorizing the expenditures of state funds for a specific purpose.

Microfilming of these records is a big job for the Auditor's office, on each working day, issues an average of 16,000 warrants representing expenditures of more than $6,000,000.

One copy of the film is kept in a fireproof storage vault in the Auditor's office where it is immediately available. Any person wishing to scrutinize a particular warrant or voucher may do so by placing the microfilm copy on a reading machine which enlarges the film for easy reading.

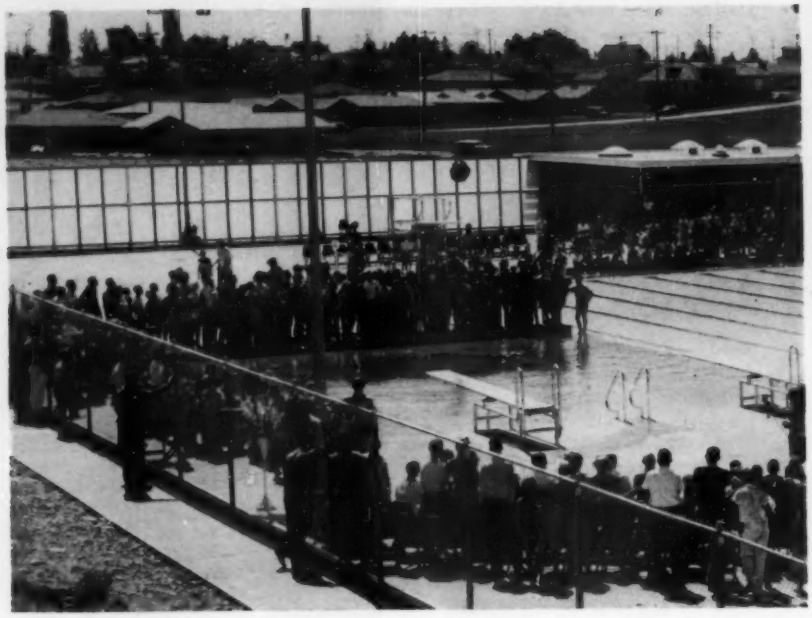
Completion of the microfilming operation clears the way for destruction of the original copies of these records. The originals are destroyed on authorization by a State Records Commission which consists of various state officials.

Illustrative of the space-saving feature which obtains with the substitution of film copies for the originals are the following statistics:

Eleven thousand warrants can be reproduced on one 100-foot reel of microfilm, which is small enough to be held in the palm of the hand. Twenty-eight of these reels, containing reproductions of 308,000 warrants, can be stored in a box of the size which held only 3,000 original warrants. This 100 to 1 ratio means one file cabinet of film reproductions can be substituted for 100 file cabinets of the original documents.

The Auditor's office, in carrying out its microfilm program, utilizes four Burroughs microfilm recorders and two readers. Three women on our staff are assigned to each recorder. One employee unfolds the documents and removes all of the staples that have been attached during the course of processing the vouchers. The second worker feeds the work into the recording machine and the third sorts the filmed records into their correct classification. The exposed film is sent daily to Burroughs where it is developed and returned to us on the following business day.

Our microfilm program is geared to best serve the public's "right to know" and at the same time maintain the highest protective standards.



Separate tanks for swimming and diving, high level illumination, spacious deck areas and ample cover are but a few of the features at South End Pool.

Three-In-One Pool "Best in West"

The South End Swimming Pool in Tacoma, Wash. serves bathers almost "around the clock"

By **THOMAS W. LANTZ**
Supt. of Public Recreation
Metropolitan Park District
Tacoma, Wash.

During its first month of operation, Tacoma's South End Swimming Pool accommodated 1,800 to 2,000 swimmers a day. This year, its first complete season, it will operate on a schedule almost "from sun to sun," with regular periods of instruction in the morning and recreational swimming in the afternoons and evenings.

Tacoma's claim that the pool is "best in the West" stems from its design advantages as well as its size.

Three Pools

The chief features of the pool facility are a 50-meter main tank of standard 164.2-foot-long, 75-foot-wide AAU dimensions, a separate 40-by-50 foot diving tank adjacent to the main tank, and a 30-by-60-foot wading pool separated by a fenced deck space from the adult sections, giving the children an area of their own.

To provide for the heavy recreational use and instruction planned for it, the main tank was restricted to a maximum 5-foot depth at the center, graduating to three feet at each end. It is laid out with ten clearly marked racing lanes for swimming meets.

The diving tank is 13 feet deep throughout its area. It is equipped with three diving boards—a 3-meter and two 1-meter boards manufactured by the Recreation Equipment Company—and provides ample deck space for spectators watching exhibitions.

The depth of the wading pool varies from zero at the perimeter to a maximum of 12 inches at the center. The pool has ample deck space for watchful parents.

The water in all three tanks is heated to a temperature of 78°-80° F. by a gas-fired Make Rite boiler, Model M375. The boiler, an indirect water heating type, makes it possible to extend the season for swimming.

The tanks are equipped with both underwater and overhead lighting to allow extensive night swimming activities. There are 14 lights around the perimeter of the diving tank and 22 arranged along both sides of the main pool. Lamps are Westinghouse 400-watt WS8's and 1,000-watt CS lamps.

Overhead lighting is furnished by five 5,000-lumen Thompson Servisafe mercury vapor standards of galvanized iron. Three are 2-light fixtures and two have four lights. The latter are at one end of the main pool, with two lights directed toward the main pool and two toward the wading pool. In addition, there are three 2-light floods on the bathhouse roof. These, combined with incandescent fixtures in the buildings, maintain high illumination levels at any hour.

Recirculation of water (there is

Kids have a province of their own, with plastic wind breaks, large deck areas and fenced-in protection against invasion by the swimmers and divers.

a complete turnover of 560,000 gallons every eight hours) is provided by a Pacific 5BA, type SLE heavy-duty pump with a capacity of 1,125 gallons per minute. Filtering is done by a 400-square-foot diatomaceous earth, 2.8-gpm-per-square-foot Model RJ-400 filter, made by the Sparkler Manufacturing Company. A Wallace & Tiernan series A-732 V-notch chlorinator purifies the water. The unit uses vacuum operation, with chlorine provided by 100-lb. cylinders.

The more than 15,000 square feet of pool area and 30,000 square feet of deck space are supplemented by an L-shaped bathhouse structure (housing checkroom facilities, men's and women's dressing rooms, toilets, showers, lifeguard rooms, and the heater and filter room) and a 10- by 32-foot concession building, connected by a covered spectator area 50 feet wide and 100 feet long. This arrangement provides 344 lineal feet of 40-foot-wide sheltered or enclosed structure.

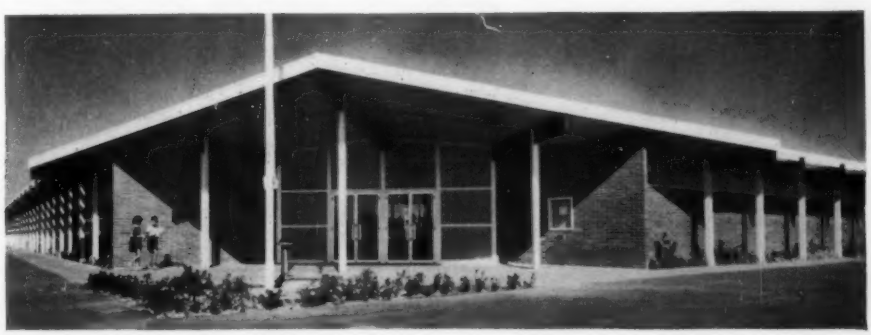
Legs of the L-shaped building alone, including areas devoted to lobby, cashier and porch, measure 144 feet and 92 feet.

Structural framing is in 10-foot modules, with glue laminated (Gluelam) beams on 10-foot centers supported by steel H-columns in 32-foot spans. The labor-saving roofing system made use of double-duty "stressed skin" panels of fir plywood, each covering 80 square feet. Each panel is made like a large sandwich, with plywood top and bottom layers glued to lumber framing around the edges. The top "skin" is the base for built-up finish roofing, and the bottom "skin" is the visible ceiling surface. The panels are 4 by 20 feet, supported every ten feet by the Glue-lam beams.

All walls and partitions are made of "curtain" type SCR brick and concrete block. The floor in general areas is concrete. Ceramic tile is used in the shower rooms.

Parking is provided for 436 cars in existing lots, with ample land area available for additional parking when needed.

Construction was accomplished in 180 days, the exact contractors' estimate of work time required. The $249,000 facility more than doubles Tacoma's public pool capacity. Architects were E. L. Mills & Associates; the builders were Construction Engineers and Contractors, and roof components were made and installed by Panelbild Systems, Inc.



Glue-laminated beams, supported by steel H-columns, bear 80-square-foot "stressed skin" fir plywood roof panels. Brick was used for the outside curtain walls.

Preparatory work before placing the lining consisted of compacting and smoothing the subgrade.

The flexible sheets were then butted together. Embankment to the rear has already been covered.

Earth Embankment Plus Flexible

Terminal reservoirs reduce size of 90-mile pipeline needed to serve Odessa, Texas

By **JAMES R. NICHOLS**
Freese and Nichols
Consulting Engineers
Fort Worth, Texas

A second earthen reservoir, recently completed at Odessa, Texas, increases the total terminal reservoir capacity of the Colorado River Municipal Water District to 160 million gallons. These reservoirs form part of the system that serves the three west Texas cities of Odessa, Big Spring, and Snyder with water from Lake J. B. Thomas on the Colorado River. Distance between the lake and the reservoirs is 90 miles. A supplementary supply consisting of some 20 wells having a total capacity of 9 mgd is located about 30 miles from Odessa between the reservoirs and the lake.

The District faced the problem of too little money for a large diameter pipeline system; but, after a complete engineering study by the District's engineers, Freese and Nichols of Fort Worth, Texas, it was determined to install the largest pipeline that was economically feasible and to supplement this with terminal storage facilities of sufficient capacity to iron out peak needs during the summer months. This meant that the reservoirs could be filled during periods of low demand and the water held in reserve for such time when demand will exceed the capacity of the pipeline.

The three types of reservoirs considered included steel tanks, concrete tanks of prestressed and conventional design, and open earth reservoirs lined with an impervious material. Following a complete study, the District selected the lined earthen reservoir based on its low cost of storage per thousand gallons.

The two reservoirs are each 730 feet by 630 feet in size and each has a capacity of 80 million gallons. The first was completed in 1954 and the second in 1958. Construction consisted of placing wetted and rolled embankment in the levees, using a 3:1 inside slope and a 2:1 outside slope. The local material available was a pervious sandy clay. This necessitated installation of some type of lining that would be impervious.

Flexible Lining Used

The impervious Gulf Seal asphalt membrane lining used on both reservoirs comes in sheets 3 feet wide, 12 feet long and ½-inch thick. This flexible material weighs approximately 120 pounds per sheet and has a specific gravity of 1.25, sufficiently heavy to eliminate the tendency to float.

Before laying the sheets the contractors compacted the subgrade to

The next step consisted of hot-mopping the cover strips and flopping them into position over the joints.

Sealing the edges of the cover strips with a cold adhesive completed the lining job.

Lining Equals Water-tight Reservoir

maximum density and rolled the surface free of all rocks and dirt clogs. Low and uneven places were corrected by applying a fine grade material.

While the subgrade work was under way, other workmen cleaned the sheets with power brushes, paying particular attention to the ends and sides to assure water-tight joints. After cleaning, the sheets were spotted in position butting ends to ends and sides to sides. Cover strips placed over the joints formed one continuous water-tight surfacing.

The strips, 9 inches wide by 5/16 inches thick, and the joint area of the adjacent sheets were both mopped with a special hot adhesive. The cover strip was then "flopped" over into proper position on the joint. Foot pressure brought both coated surfaces into intimate contact. Hand repointing with a cold adhesive of the junction between covering strip and lining sheet completed the installation procedure.

Protective Cover

The lining in both reservoirs received a protective cover, one of pneumatically blown mortar and the other of soil cement. This protective cover permits the use of heavy power equipment for cleaning, for it is anticipated that on occasions it will be necessary to blade the slopes down with a maintainer and remove the material with a loader and trucks. The District, however, has two other lined reservoirs without protective cover and these have caused no difficulties.

Success of the asphalt membrane lining manufactured by the Gulf-Seal Corporation of Houston, Texas, was demonstrated by recent tests. Holes dug at two points adjacent to the Odessa reservoirs gave no indication of seepage. Long range plans of the District include additional reservoirs of the same type of construction.

Final result—a water-tight reservoir. The reservoir to the left was completed in 1954, the one at the right in 1958.

C. A. Harrell, City Manager: "Placing of outdoor telephone booths at hundreds of strategic street locations throughout our city provides a necessity and convenience to our citizens where most needed. Modern outdoor booths, regularly serviced and neatly maintained, are an asset to our city."

Cincinnati Likes Outdoor Phones

The city government of Cincinnati for five years has been working with telephone officials in a program that may well become a pattern for other municipalities. It is the provision of a special service for the public and additional income for the city through the placement of numerous outdoor public telephones on city property.

In close cooperation with the Cincinnati & Suburban Bell Telephone Co., city leaders have authorized the installation of some 340 outdoor public phones throughout Cincinnati. The aluminum booths, paneled in glass with blue trim, are usually found at the curb side of sidewalks. Many are in the business district, others along main access roads and at schools and the terminal points of bus routes.

Later this year, the Bell System is planning to approach local government leaders across the country with a program for outdoor public telephones that draws heavily from the Cincinnati "five-year plan."

Government heads such as City Manager C. A. Harrell, Public Utilities Director George W. Howie, and Police Chief Stanley R. Schrotel emphasize these points as important in the success of the outdoor phone program in their municipality:

1. **The numerous curbside phone booths provide an emergency communications function in police, fire, and health matters—especially at night when stores and buildings are closed.**
2. **At any hour, the outdoor installations offer an extra convenience for residents and visitors.**
3. **Through judicious planning, the booths are so placed that they do not impede sidewalk traffic, nor offend aesthetically.**
4. **Through commissions on the usage of the booths, the phone program provides a source of continuing revenue for the city. This revenue is particularly welcome because it doesn't require the imposition of any taxes.**

Phone company officials point out that a number of other communities have programs for outdoor booths on public property but that Cincinnati's time span of experience and method of procedure provide a pattern that other municipalities might follow.

Following a series of discussions between governmental leaders and Cincinnati Bell personnel, the City Council passed an ordinance that incorporated points of agreement and authorized installation of outdoor booths on public property. The ordinance was passed on January 12, 1955. The first outdoor telephone on city property was placed in service just four months later.

Important to the future success of the program was agreement on a form to be processed by city and phone personnel for each proposed outdoor telephone installation. This form insures that the selected location has been reviewed for such factors as vehicular and pedestrian traffic flow, long range plans for the specific area, and aesthetic qualities.

Reaction in the Cincinnati press has been favorable toward the outdoor phones from the start. A number of people have reported making emergency calls from these booths, which remain lighted all through the night, and many locations were chosen on the basis of citizens' requests for around-the-clock public telephone service at various spots.

As many as 2,000 calls per month are being made from some of the outdoor public booths in the business district.

Sidewalk traffic is not disrupted by Cincinnati's outdoor telephone booths, located near the curb and back from busy street intersections.

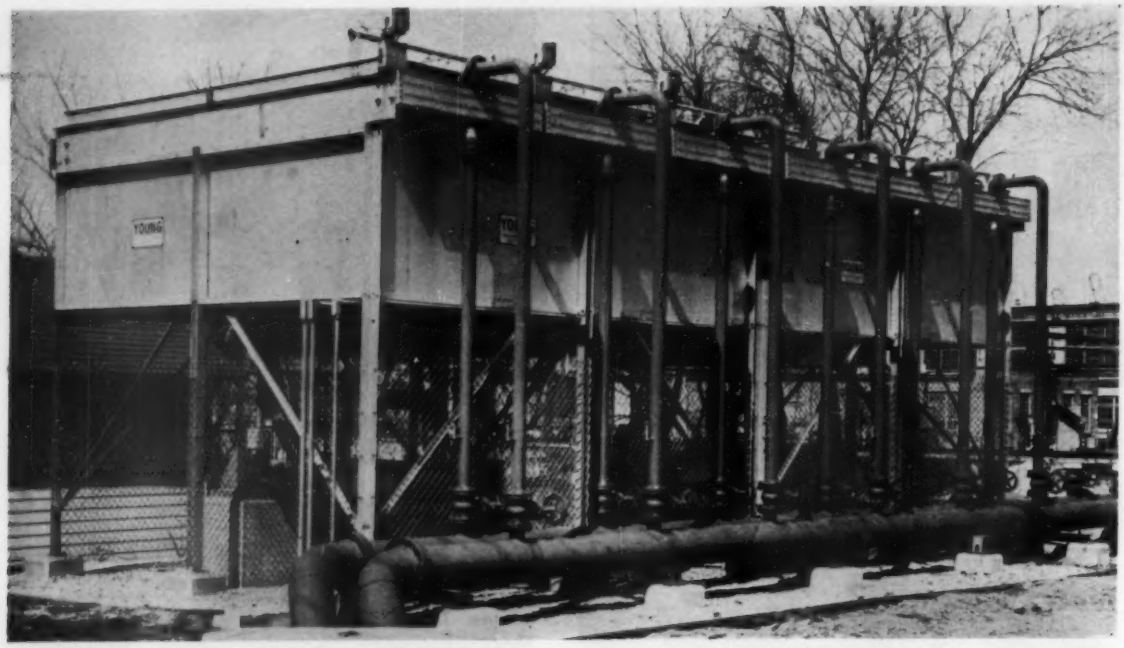
When stores and buildings are closed, Cincinnati's sidewalk public telephones prove especially popular with the public and make a contribution to safety.

Telephone booths placed near the schools have proved to be a convenience to the children and their parents when plans for the day have to be changed.

Residential locations for outdoor booths provide emergency service, especially at night, and such phones are also convenient for motorists who need assistance.

Police Chief Stanley R. Schrotel: "The establishment of telephone facilities on public streets has brought police assistance even nearer to our citizens. Their contribution to law enforcement and public security is great."

Director of Public Utilities George W. Howie (left) discusses long range development of Cincinnati's outdoor public telephone program with W. G. Stroup, general sales manager of the Cincinnati & Suburban Bell Telephone Co.



Engine jacket water is cooled in this Young radiator. An additional cooling unit is out of sight to the right.

New Dual-Fuel Diesel Cuts Cost

Big 2,800-hp engine drives 2,000-kw alternator—produces lion's share of generation—saves 21% on fuel

By **KEN. R. ENGSTROM**
Utilities Manager
Board of Public Works
Zeeland, Mich.

Because it produced 71% of the total plant output at a fuel cost of 21% below previous plant averages, a new 2,800-hp, dual-fuel engine has forced Zeeland, Mich., to put the unit to greater use than originally planned and it is no longer used for base-load service only. The unit, an 8-cylinder (18-inch bore and 27-inch stroke) Fairbanks-Morse diesel, handles its rated horsepower at 277 revolutions per minute.

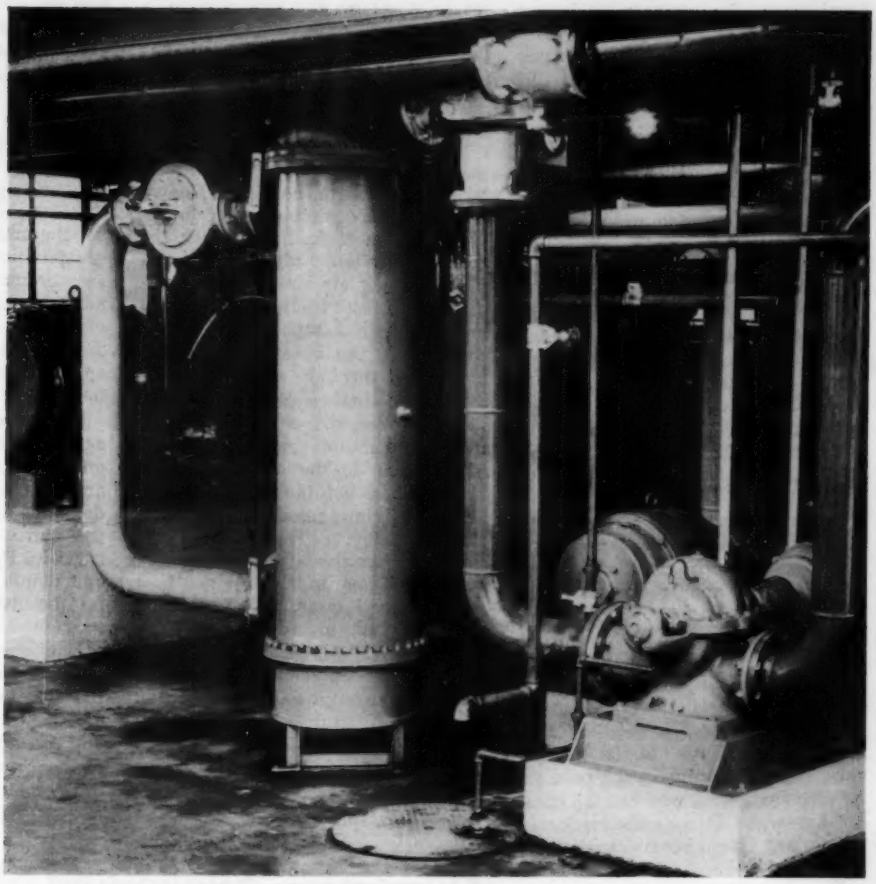
For more than 20 years, electricity for homes, stores and industries of the city has been provided by diesels in the municipal power plant. The first engines to go into service were two 375-hp Fairbanks-Morse diesels installed in November 1937. In 1939, a 695-hp F-M engine was added and two years later a second, identical unit was put on the line. These prime movers carried the city through the war years, but in 1947, the peak load topped firm capacity, and Zeeland installed a 1,400-hp F-M unit.

The sharp post-war climb in demand led to the addition in 1949 of a 1,600-hp F-M opposed-piston diesel, which replaced one of the 375-hp units and packed more than 400% of the original engine's power on the same foundation. These were followed in 1952 by an 1800-hp Nordberg radial diesel.

Thus, successive expansions have kept plant capacities ahead of peak demands. But at the time of each installation, firm capacity was below peak load, necessitating operation of the largest engine. Now, with population rising and residential consumption growing steadily, Zeeland has put into service its seventh —and by far its largest—engine.

Though it operated less than nine months in the fiscal year ending June 30, 1958, it produced 5,305,000 kw-hours, more than 40% of the plant total that year of 12,944,100 kw-hours. From July through October of 1958, the unit generated 3,217,000 kw-hours, 71% of the plant's total output for the period. Its record for the entire fiscal year is an estimated 12,660,000 kw-hours for 75% of total plant output.

Despite the heavy work sched-

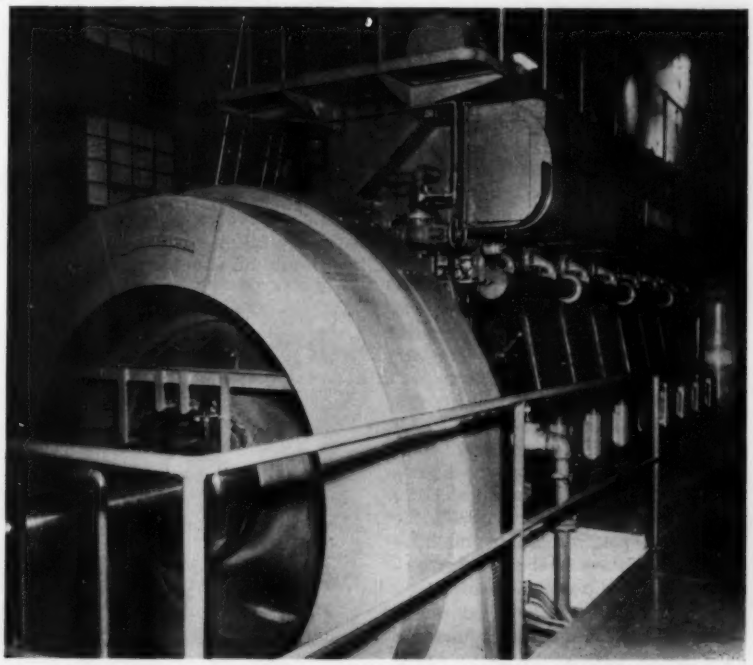


Serving the 2,800-hp engine are a Roots-Connersville blower with 250-hp F-M motor, a Young oil cooler, a Roper auxiliary lube pump and an F-M jacket water pump.

ule, the new engine still cannot realize its full efficiency potential, for it is called upon to operate at poor load factors, often well below 50%. The policy of greater use, however, has been sound and has meant money in the bank for Zeeland. Even operating on straight diesel fuel, the new engine is the most efficient in the plant. In addition, it can operate on natural gas with a small quantity of pilot oil. This combination of factors has made it profitable to run the big unit at poor load factors, even though gas costs 47 cents per 1,000 cubic feet and pilot oil costs 12.5 cents per gallon compared with diesel fuel at 10 cents.

Figures Tell the Story

In the fiscal year that ended June 30, 1957, average fuel cost for the plant was 8.24 mills per kw-hour. In the following year, with the new engine operating less than nine months—and part of that time on straight oil—the plant average was down to 7.27 mills. For the first four months of the 1958-59



New 2,800-horsepower diesel drives 2,000-kilowatt alternator. The unit is housed in a new addition to the Zeeland power station.

fiscal year, the average fuel cost was cut further to 6.52 mills. The engine itself averages 5.74 mills per kw-hour during this period. In September, 1958 its peak production month, the engine turned out 899,000 kw-hours, at an average fuel cost of 5.30 mills.

Trend in power sales is favorable to efficient plant operation. Some of the seasonal industrial load is being stabilized by greater residential consumption. The prevalent gain in air conditioning has helped build the summer load so that summer peaks are not far below those of winter. As the load grows, it will be possible to carry heavier average loads on the big engine with resultant gains in efficiency and economy.

Low Costs—Low Rates

Zeeland has always translated diesel economies for the area into low rates to consumers. Residential rates are among the lowest in the state, starting at 4.2 cents per kw-hour for the first 50, then dropping to 2.1 cents for the next 150 kw-hours and 1.6 cents for the balance. For controlled water heating, the consumer is allowed 340 kw-hours at 1.07 cents. In the last fiscal year, the average price paid for all electricity sold was just 2.3 cents per kw-hour. Despite the low rates, the plant has been consistently profitable.

The new engine was provided with a full complement of accessory equipment, some of it designed to improve operations for the entire plant. Thus, the radiators (manufactured by the Young Radiator Co., Racine, Wis.) that cool the jacket water for the new engine have sufficient capacity to serve the whole plant. At present, only the new No. 7 and the No. 5 engines are hooked into this system, but it is planned to add all units to the common header. Jacket water for No. 7 is circulated by a motor-driven centrifugal pump, and temperature is controlled by a thermostatic proportioning valve. Wells provide cooling water makeup.

Radiator-cooled water also is circulated through a shell-and-tube oil cooler to cool the lube with temperature again controlled by a proportioning valve. The main engine-driven lube pump circulates the oil through the engine, cooler and full-flow filter. Part of the lube is bypassed through a cartridge filter. A motor-driven auxiliary lube pump performs before-and-after service and is big enough to serve as a stand-by for the main pump.

Since a different fuel oil is used for pilot oil on the new engine, a 10,000-gallon tank is allocated to this service. The fuel is transferred automatically to a 600-gallon day tank in the plant basement. No. 4 fuel oil used for straight operation is unloaded into a 20,000-gallon tank which is heated by hot jacket water from the plant. Heated oil is put through a purifier into a 10,000-gallon tank, from which the engine's day tanks are supplied.

Scavenging air for the two-cycle, dual-fuel diesel is drawn from roof level through a pipe to a concrete chamber in the basement where it is passed through a self-cleaning filter. The air then goes to a 13,650,-CFM blower, driven at 3,550 rpm by 250-hp motor, then through an inter-cooler to the engine's intake header. The volume of air is regulated to achieve maximum combustion efficiency.

Though the dual-fuel engine normally operates on natural gas fuel with a small quantity of pilot oil, it can switch instantly to full oil operation if gas supplies should fail. It has been economical to keep pilot oil consumption at a minimum. For example, in the peak production month (899,000 kw-hrs.) the engine consumed 9,742.5 MCF of natural gas and 4,086 gallons of pilot oil. This was an average of 10.53 cu. ft. of gas and just 0.00454 gallons of oil per kw-hour.

The Zeeland municipal generating station is 22 years old. Yet since 1937 when the first of the diesels was installed, no addition to the structure has been needed until No. 7 was purchased.

One reason for this has been the development over the years of greater power per square foot of area occupied. It was this development that enabled Zeeland to remove one of the original 375-hp diesels and install the 1600-hp opposed-piston engine on the same foundation.

The extension of the building to accommodate the new No. 7 unit and its accessories carried with it an opportunity to plan for future demands on the power station. The addition was designed to house the 2,800-hp F-M engine and alternator, and ample room has been provided for the installation of its twin when it is needed.

Now serving 5,000 persons in the city and an additional 1,500 outside the city limits, Zeeland's successful electric utility has come of an age—and there is built-in accommodation for continued service to the expanding community.

Aluminum Auditorium For Texas Capital

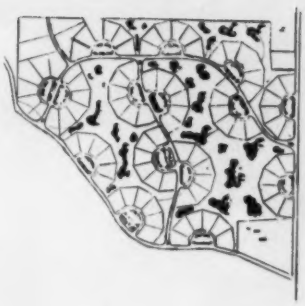
An aluminum dome in four contrasting colors is rapidly nearing completion in Austin, Texas. It will be the municipal convention center and public auditorium; the $4-million structure is 78 feet high and will seat 4,500 persons.

About 63,000 square feet of roof area are covered with an unusual pattern of aluminum sheet supplied by Aluminum Company of America, 1501 Alcoa Bldg., Pittsburgh 19, Pa. Metal Trims, Inc., Jackson, Miss. applied the two shades of green to the metal. The grey color was processed by Universal Corporation of Dallas, and Mid-States Metal Finishing, Inc., Hurst, Texas. The auditorium was designed by Jessen, Jessen, Millhouse and Greeven; and Page, Southerland and Page, Associated Architects, of Austin.

Aluminum in four shades provides the crown for Austin's Municipal Auditorium.

The original grid layout . . .

was first revised like this . . .



then finally changed like this.

Cluster Garden Subdivision

. . . reduces street and utility costs, provides amply for home construction and open park area

By **MYRON X. FELD**, Planning Engineer
Stephen Sussna Associates, Trenton, N. J.

Consider what has been happening to subdivision design. The old horse-and-buggy, gridiron pattern of rectangular lots and right-angled streets has given way to a wide variety of curvilinear and circular ways, drives, lanes, and boulevards, spread all over the landscape. This has led to a most interesting variety of development which on the whole has improved the utilization of land. By adhering more closely to the terrain it eased drainage problems and at times increased the number of available lots.

But it has produced inconveniences. It has multiplied the surveying and engineering costs and it has destroyed all logic to street naming, making the task of locating an individual home in a new subdivision, to say the least, most aggravating. More important, it destroyed any rural character of the area.

Some communities have attempted to stem the tide of development by zoning larger lot sizes, sometimes requiring as much as five acres or more. This has only resulted in a temporary setback and has not been a real detriment to development. Most times the only result has been to increase the cost to the homebuyer, with no real relief from the all-encroaching packing of the landscape with home development. For no matter how far they are spaced or spread, any development with lots side by side and back to back is still residential and inconsistent with the rural character that these communities would like to maintain.

Fortunately, solutions have been worked out to develop new types of subdivisions. We cite a recent example. A plat originally submitted to the Planning Board by the subdivider was a gridiron pattern (see illustration 1) containing 94 generally rectangular lots each of 50,000 square feet. Developed on steep, hilly terrain, it contained about 12,000 feet of new roads.

We were able to improve this plan to some extent by developing a curvilinear pattern (see illustration 2) along FHA lines. The new plan provided 96 lots of approximately the same over-all area as the original plan. It resulted in a road length of 11,600 feet, a saving of about 500 feet. In addition, by eliminating the two cul-de-sacs, and right-angled bends, some improvement was made in the general circulation and storm drainage pattern, as well as making some provision for future connections to adjoining properties, allowing their future development as part of an over-all plan.

While this plan was a considerable improvement, we were not altogether satisfied with it. The area would have to surrender too much of its desirable rural character. Therefore, an alternate plan, titled the "Cluster Garden" (see the third illustration) was developed. This plan in general consisted of 15 groupings of 6 lots each, arranged in semi-circular or fan fashion around a central plaza, connected by two sweeping roads. The lot sizes were decreased to ¾ of an acre each, still considered more than adequate for individual privacy and ordinary suburban living. The number of lots was kept about the same as the two previous plans. The remaining land, or approximately half the acreage, was to be left as natural undisturbed park or commons and as a green barrier between clusters. This open land is now also available as a play area and wanderland for the school boy. In addition the landscaped plaza serving as a nucleus for each cluster serves as a playground for the preschool child in full view of each house in the cluster as well as adding off-the-street parking space for visitors to the suburban home. Best of all, the paved street length was cut to approximately 6,000 feet, with all the resulting economies in utility and other installation.

This view points out the vast size of the reservoir. Overall dimensions are 1021 feet long by 501 feet wide.

More Than Engineering Needed

New reservoir requires a resourceful public relations program to quiet fears of construction damage

By J. H. TURNER
General Manager and
Chief Engineer
Water Department
San Francisco, Calif.

Continuing a policy of maintaining adequate distribution storage within the city, San Francisco will add 87.3 million gallons to storage when the Sunset Reservoir-South Basin is completed this fall. The reservoir, located in the heart of the Sunset residential district and made up of two basins, will control the pressure for about 45% of city use. The north basin, completed in 1938, has a capacity of 89.4 mg and the total storage in the two basins will provide about four average days' storage and about three maximum days' storage for the service area.

The Sunset Reservoir will be the largest of the five primary distribution reservoirs supplied directly by transmission lines from the terminal storage and impounding reservoirs on the peninsula. It normally receives water directly from San Andreas reservoir by gravity with additional water from Crystal Springs reservoir via the Lake Merced pumping station, but it can also be supplied from two other pumping stations within the system.

The rectangular basin is 1021 feet long by 501 feet wide with the corners squared off about 99 feet back on the long side and about 69 feet back on the short side. The depth varies from 31.5 feet at the overflow line, the deepest point, to 28.5 feet at the shallowest point with the floor slope being 300 to 1 on the valley line running approximately diagonally towards the outlet tower offset from the northwest corner. The side slopes are 2½ to 1.

An underdrain system consisting of 6-inch drain tile in a 2-foot-wide trench around the entire toe of slope gives drainage both ways from the upper end of the valley line. In addition a French drain lies under the valley line. All drains lead to the main drain through the outlet trench on which measurements can be made of the total leakage through the underdrains.

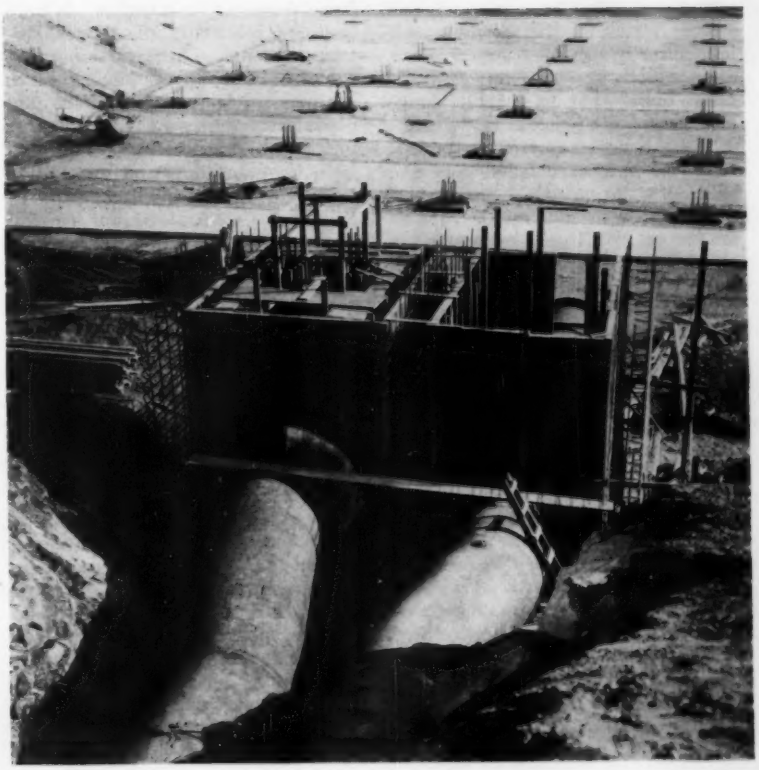
The reservoir lining is similar to that used in the Summit Reservoir completed in 1955 and that has proved most satisfactory. Although unstable material was removed and replaced and the slopes were rolled in the fine grading process we made no attempt to make the basin tight by use of a clay blanket. The design called for 2 inches of plant mix which in reality provided a smooth base for a ¼-inch catalytically-blown asphalt membrane, followed by a 4-inch concrete slab. All construction joints and additional dummy joints formed with beveled wood strips are filled with a mastic joint sealer of a type previously used and found satisfactory.

The roof, with 498,375 square feet of area, was designed for a 50-lb./square-foot live load. It rests on a 25-foot grid system of 22-inch- and 24-inch-diameter columns capped with 24-inch-deep girders and 10-inch-deep joists under a 3-inch slab. The design layout conformed to conventional clear-span removable-steel-form construction and called for concrete to be placed in 25-foot strips. The roof system—designed for earthquake loading with the columns carrying the side thrust and the roof girders permitted to slide on the supporting crest beam around the perimeter of the reservoir—is symmetrical around both center line axes. Expansion joints are located on each axis with

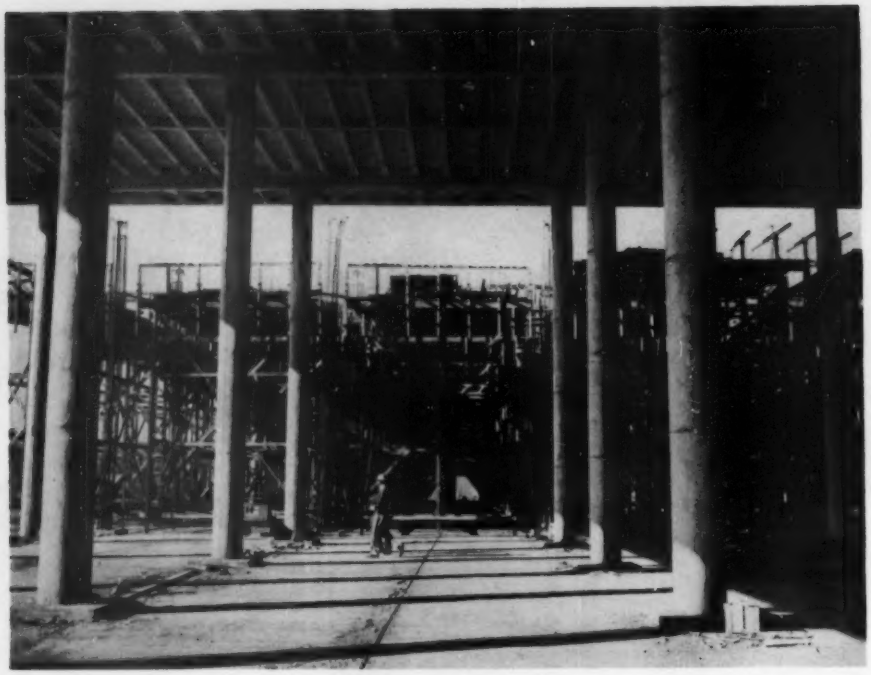
A truck crane places ready mix concrete used in the 4-inch floor slab.

one expansion joint on either side of the longitudinal axis and two expansion joints on either side of the transverse axis. The roof slope is 150 to 1 both ways from the ridge along the longitudinal axis and a gutter poured monolithically with the crest beam carries away the roof drainage.

A 54-inch-diameter inlet line and 60-inch - diameter outlet line encased in concrete in a common trench through the embankment terminate at the gate tower rising from the toe of slope in the northwesterly corner. The tower is divided into a dry tower inlet section containing a 30-inch gate valve, and a wet tower outlet section equipped with screen slots and a 60-inch slide gate on the reservoir side of the tower port. The inlet line extends 200 feet into the basin and normally all water will flow through the reservoir to the consumers be-



Extension of the inlet line 200 feet beyond this inlet-outlet tower aids circulation of water through this large basin.



Left:
A grid of concrete columns supports the monolithically poured roof system of girders, joists and 3-inch slab.

Right:
Nine lines of towers permit a continuous construction program on a 12- to 14-day stripping schedule.

yond rather than allow the reservoir to float on the line. A meter on the outlet line will automatically control rechlorination when needed.

This is the second reservoir in which San Francisco used the plant-mix base, asphaltic membrane, and 4-inch concrete slab with mastic joint filler in all construction joints, as a method of constructing a waterproof lining that is durable, long-lasting and easily cleaned. Results of leakage measurements on the first reservoir were very satisfactory and leakage as measured by the underdrains, after a few minor repairs. amounted to 1.3 gpm on one basin and 1.4 gpm on the other basin of the 14-million-gallon, 26-foot-deep reservoir. Hook gauge readings indicated that from 70% to 80% of the total leakage losses were due to underdrain leakage. Underdrain leakage after three years of service now totals less than 1 gpm for the two basins. A 1-gpm loss is equal to a drop of 0.02 inches per day with a full reservoir. Comparable results on the new reservoir would be most satisfactory.

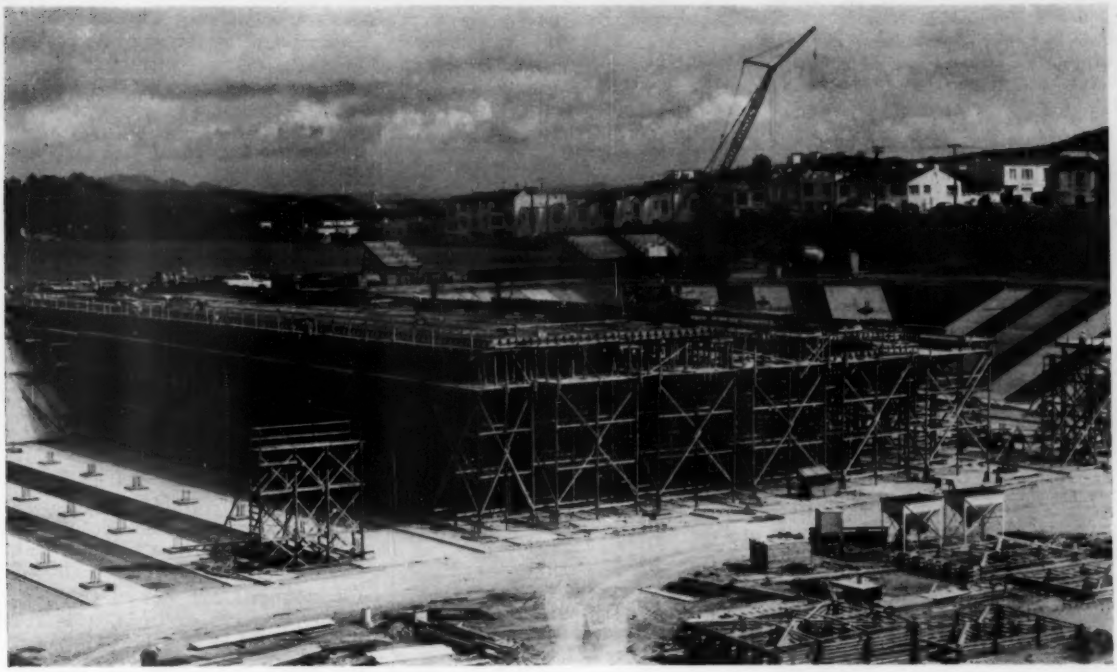
Blasting Problems

The Piombo Construction Company completed the first contract for excavation in 1957. They employed conventional methods in the excavation and hauling operations in this contract but encountered the problem of blasting in the midst of a residential neighborhood.

This contract entailed the removal of 657,000 yards of material. About 15% had to be broken by blasting and this operation resulted in many complaints, claims of alleged damages, "headaches" to both the contractor and the Water Department and in general created a somewhat difficult public relations problem. As usual the contract placed all liability on the contractor for any and all damage resulting from his operations and in addition to the normal insurance requirements, the Central Permit Bureau of the Department of Public Works required the posting of a $100,000 bond as a condition of the blasting permit. As a further precaution the contractor made available a field seismograph of the falling pin type for continuous setup on the job and his insurance company made a survey of a number of adjoining homes to determine condition of houses (particularly plaster cracks) prior to any blasting operations.

When the early shots were set off the field seismograph, consisting of a series of ¼-inch-diameter pins ranging from 4 inches to 14 inches in length and balanced within protective tubes on a leveled glass plate, was set up on the front steps and within the kitchens of a few homes closest to blasting locations. This was done to insure that the maximum charge the contractor proposed to use was well within the safe limits to avoid structural damage to homes. However, such criteria are not necessarily satisfactory to home owners and by the end of the first six weeks, the aggravation of about 8 shots per day, plus some probable stimulus from the more annoyed residents, resulted in a sudden "snowballing" of complaints. One of the more enterprising complainers called a mass meeting of all nearby residents to invite them to join with him in a common claim, or suit if necessary, against the contractor for damages.

Although not invited to the meeting, two Water Department representatives attended and were somewhat amazed at the way the invitation was presented and more so when the lead complainer called upon his attorney to discuss the difficulties and expense of separate suits and the advantages of a common suit. The attorney was careful to inform the people that they should select the attorney of their choice although his services could be obtained by those who wished to avail themselves of the opportunity. Following these talks, questions and comments from the floor made it apparent that many of the people were being led to believe that all that was required to get every plaster and basement crack in their homes repaired and their rooms painted would be the filing



of a claim which, if not paid, could be easily collected through court action. In fact a suggestion of an injunction to shut the job down was very quickly discouraged by the meeting leaders. The trend and tone of the meeting became sufficiently disturbing to Water Department representatives present that even though they had been politely informed by the chairman at the beginning of the meeting that their services were unnecessary, they requested opportunity to speak. Reception was neither cordial nor friendly at first but they were able to assure people that their homes were not going to be structurally damaged, that further limitations would be put on blasting and that claims could be filed with the department for transmittal to the contractor's insurance company. This quieted the meeting and led to an adjournment without any hasty or ill-advised agreements on a group action.

A number of homes were visited before the incident, because of alleged damage, and many were visited after the incident. Relatively few cracks appeared to be new and usually these were small and found only in a limited number of houses. However, most home owners were apparently unaware of old plaster cracks or basement slab cracks in their homes, for quite often all or practically all cracks shown to inspectors following up on complaints were alleged to be the result of blasting operations.

Our records show a total of 45 claims filed in specified amounts for alleged damage, 82 claims filed for alleged damage of undetermined value and 87 complaints received with no claim filed. No doubt some additional complaints were received and handled directly by personnel on the job. The contractor's insurance company handled all claims directly.

Reservoir Construction

The second contract, awarded to Fruin-Colnon Contracting Company, stipulated the work to start in May 1958 with a time allowance of 540 days for completion. This covered the construction of the lining, roof and appurtenances. Following the fine grading and rolling of the slopes, the contractor used a Caterpillar D-6 front-end loader to place the 2-inch layer of plant mix. The material was hand-raked and compacted to at least 92% density with a Rolcor Vibrapac roller controlled by either a Cat or truck winch operating on the crest. Construction of the reservoir bottom resembled that of a conventional road job with a Barber-Greene spreading the plant mix and a 7-ton tandem roller handling compaction.

Next came the column bases, cut through the plant-mix base, followed by the asphaltic membrane placed on alternate strips in a two-spray pass operation. In general sufficient area was cleaned to permit placing at least 20 tons of membrane per operation. The 4-inch concrete slab then followed with the ready-mix concrete being placed with a truck crane, vibrated with a Clary Screed, and given a wood trowel finish.

As soon as sufficient slope and floor area were completed, installation of the roof got under way. The symmetry of design permitted the contractor to set up a repetitive operation with emphasis on scheduling that resulted in an economic and satisfactory construction program.

Movable towers capped with a platform serve as the falsework to be placed in each column bay. The towers are topped with six feet of adjustable shores, using Ellis clamps to take care of the three feet of drainage slope in the reservoir floor. A line of ten towers permits strip pours of one-half the reservoir width and nine lines of towers are required for continuous progress by all work crews. The contractor voluntarily added one-half sack of cement per yard (later reduced to one-quarter sack) to attain the concrete strength necessary to permit the stripping and tower moving schedule desired. Inspectors check the strength of concrete with a

Schmidt hammer prior to removal of girder and bridging supports on all pours. The Schmidt hammer was calibrated at the beginning of the job by coordinating hammer tests on in-place concrete and on test cylinders of the pours with the test cylinder break results.

The nine lines of towers permit eight successive 25-foot lanes of activity. For simplicity these may be described as: one lane of tower moving; one lane of placing slab and joist pans, column steel and forms and girder forms; one lane of placing column concrete; one lane of placing girder, joist and slab steel; one lane of placing deck concrete; and four lanes of supported roof which are curing. All stripping is done on a 12- to 14-day schedule. According to the present schedule the roof will be completed in late August and barring unforeseen difficulties, the reservoir will be completed in November.

No project description would be complete without some comment on costs. Final figures are of course not yet available but the estimated final costs are listed in the accompanying table with a breakdown in four major classications plus a miscellaneous grouping. The cost per square foot is listed only for the lining and roof system. Earthwork costs were high because of the quantity and quality of material to be excavated, all of which had to be removed from the site.

The San Francisco Water Department is one of several utilities controlled by the San Francisco Public Utilities Commission, a five-man board appointed by Mayor George Christopher. Mr. Robert C. Kirkwood, Manager of Utilities, is the executive head of all utilities and the writer is the executive head of the Water Department.

SUNSET RESERVOIR—South Basin

Item	Total	Construction Costs Per M. G. of Res. Cap.	Per Sq. Ft. of Lining or Roof
Earthwork	$ 867,850	$ 9,941	
Lining	381,500	4,370	$0.749
Roof System	1,320,920	15,131	2.65
Piping and Valves	96,900	1,110	
Miscellaneous*	115,990	1,328	
Total	$2,783,160	$31,880	

* Includes chlorine station, tower and miscellaneous concrete work, road surfacing, fence and landscaping.

Unique Police Headquarters

New split level police headquarters for the Town of Greenburgh, N. Y. has striking glassed center section. The headquarters cost $376,000.

The new police headquarters of the town of Greenburgh, in Westchester County, N. Y., is located prominently in a wooded area at the top of a hill. It was built on three levels, blending with the rolling contours of the site.

The officer reporting to work in the morning parks his car in an area where there is room for 45 cars. He enters the building through a private entrance leading directly to dressing and mustering facilities. The public entrance is at the curved front of the building. Plant boxes of rugged and attractive fieldstone are placed here to contrast with the formal Norman brick on the lower portion of the building at this point. To add greater interest and eye appeal, a light brick is used on the balance of the building. The curved area encases a bright lobby with tinted, heat-absorbent glass.

From his raised desk in the lobby the officer can look through conveniently located windows into the communications room and the two booking rooms. The cells are quickly accessible through a door behind him. There are six cells, two female, four male; and space for two more. An intercom system at the main desk connects all offices.

Close at hand, in one wing are the office of Chief of Police John Sheridan, the conference room and report room. In the other wing are the photographic dark room, the mugging room and the pistol range.

In the lower level of the station there is a garage for storage and repair of the ambulance and other motor equipment used by the force.

The third and uppermost level of the headquarters building serves one of the most important functions in police work. It houses the Juvenile Aid Department. With a separate entrance, waiting room and conference room it is so arranged as to provide maximum privacy to the youngsters and parents.

Town Supervisor Edward H. Innet, in collaboration with architects Brown & Guenther of New York City, decided that the new headquarters would be functional and economical and that the design was suitable to the community.

Trailer-mounted 100-gallon sprayer is towed behind truck; long hose reaches entire area of each half-acre bed from access roads. Auxiliary water supply is carried in 500-gallon tanks on truck.

Right:
Two weeks' uncontrolled weed growth in untreated area can be compared with clean area (background) which has been sprayed with chemical weed killer.

Weed Killers for Sewage Filter Beds

City substantially lowers cost and gets much better results with chemical spray control of weeds in eight half-acre sewage filter beds

By **CHARLES F. MYETTE**
Tree Warden
Dept. of Public Works
Concord, Mass.

Cut 1,500 man-hours down to less than 100, save $2,000 per year—doing a better job at lower cost—and you're in step with today's requirements for most public works programs.

Such a record has been chalked up by the Public Works Department of Concord, Mass., during an experimental chemical control of weeds in sewage filter beds. Manpower has become a critical municipal problem but interdepartmental teamwork has overcome this difficulty to pay real dividends.

The Tree Warden in Concord, as in so many towns of its size, is responsible for insect pest control as well as control of poison ivy and other noxious weeds. Naturally, his knowledge of spraying equipment and chemicals becomes acute through every-day usage.

Until a few years ago, four or five men of the Sewage Collection and Purification Section had to spend between six weeks and two months scraping weeds out of the town's eight half-acre sewage filter beds. Beds are used in succession with six beds filtering or drying, current sewage flow running into the seventh and an eighth, a spare bed, lying idle. At that time we decided to experiment with spraying to control the weeds.

A number of chemical suppliers cooperated in an extensive experimental program to determine whether chemical weed control would be effective and economical.

At first, everything seemed to be against the success of chemical control. The natural fertility of the beds supported an exceptionally vigorous growth of vegetation, which flourished on the tremendous amount of water remaining in the filter bed after each cycle. The construction and location of the beds gave the growing plants a maximum of sunshine throughout the growing season. As a result, weeds grew to two or three feet between cycles and it was necessary to give constant attention to maintaining the rate of flow through active beds. There was also the danger that the

More than 20,000,000 gallons of water have drained through this sewage filter bed since it received chemical treatment consisting of one spraying of Karmex diuron weed killer. The author is shown checking the condition of the bed.

existing beds might become inadequate for demands of a town population that has nearly doubled since the beginning of World War II.

Records indicated that an average of four men and a dump truck, working two eight-hour days, were required to remove weeds from a single bed. Done three times each season, this cost nearly $90 per bed per weeding, or a total cost of over $2,000 per year —to say nothing of tying up men who were needed elsewhere. Besides, raking and hoeing left beds in poor condition for filtering.

In chemical weed control trials, three major problems were encountered:

1. Need for a chemical which would remain in the bed long enough to be economically effective through one or two filtering cycles with a required normal flow of 3,500,000 gallons of sewage water per cycle. No sludge problem was encountered on the Concord filter beds since settlable solids had been removed by an Imhoff tank.

2. Beds, nearly a mile from a paved road and water supply, presented a water and chemical hauling problem.

3. Reduction in the efficiency of the filtering beds as a result of chemical treatment was a problem to be considered. Essentially this meant no crusting, compacting or clogging of the beds.

The program, adopted this year, is based on use of Du Pont "Telvar" monuron weed killer and "Karmex" diuron weed killer, both nearly insoluble in water, but applied in a water suspension. The Concord program calls for application at a rate of 50 pounds per acre in 600 gallons of water. The equipment consists of a 100-gallon John Bean weed sprayer, drawn behind an International truck carrying 500 gallons of water in an auxiliary tank.

Two men making one trip to the beds with 50 pounds of chemical and 600 gallons of water can treat two half-acre beds in half a day at a total average cost of $68 per bed per treatment, or $800 for weed control in all eight beds for the season.

Case Histories

Selection of this program was based on dozens of tests over the past several years. But the following three test summaries indicate the results obtained.

Filter Bed 4: Sprayed May 22 with 25 pounds of "Karmex" diuron weed killer in 300 gallons of water. No weeds were evident on June 28 when water was applied to the beds. Water was turned off July 2, after 3,500,000 gallons had been filtered. The bed dried out until July 9, and another 3,500,000 gallons of water were applied during the next three days. After remaining dry for another 20 days, a few weeds started to grow. On August 9, the bed was re-sprayed with "Karmex" at 15 pounds in 300 gallons of water. Several additional cycles produced no significant weed growth during the rest of the season.

Filter Bed 9: This bed was sprayed May 23 with 15 pounds of "Telvar" monuron weed killer, and 3,500,000 gallons of water was applied June 10 through June 17. After a drying period, the bed was again placed in operation June 21 through June 28. On July 3, considerable new growth of weeds was evident, and the bed was sprayed on July 5, with 21 pounds of "Karmex" diuron weed killer. By July 10, all weeds were completely dead, and no new growth appeared for the rest of the season, although the bed was used several times again in August and September.

Filter Bed 8: This is a spare bed which was not used from the time it was sprayed May 31, until late September. Twenty pounds of "Telvar" applied May 31 kept it completely weed-free for the entire season.

Of the two different weed killers used, diuron is about one-sixth as soluble, though somewhat more expensive. But diuron used as the initial spray holds weeds in check longer than monuron. From the Concord experimental program, it appears best to use diuron first, then follow up with monuron if needed.

When some weed growth had already started before spraying, all plants would die and dry up after application without leaving any significant residue to delay the functioning of the bed or to be raked up and hauled away.

Officials believe that Concord has developed an economical, low-labor preventive weed control program which eliminates weed growth before it becomes a problem. Hand hoeing was used only for initial preparation to remove established weed growth so that chemical sprays would not leave dead plants to be removed.

The program keeps the beds weed-free from the beginning of the season to the end, and increased efficiency of weed-free filtration indicates that the present bed area will take care of Concord's increased population.

If You Were A Mosquito—

If you were an airborne mosquito no more than 150 feet away from a mist sprayer containing an insecticide consisting of 6 gallons of 11% benzene hexachloride in 94 gallons of water, you almost certainly would be dead in an hour. If you were between 200 and 250 feet away you would be dead in 26 hours. If you were not aloft but were hidden in bushes or tall grass, you would have a 40% chance of survival at 50 feet, and a 75% chance at 250 feet from the sprayer.

These represent results of tests undertaken at the University of Maryland, where a John Bean Rotomist Model 100-E sprayer was used. Mosquito control work in this state is a function of the State Board of Agriculture which also is the Board of Regents of the University of Maryland. All programs operate through the Dean of Agriculture and the Department of Entomology.

It's all in the picture(s)...

1 solution for 8 cost-problems

...CASE *Utility* LOADER

Each of the above figures represents a cost-vs-method problem. Should you handle miscellaneous light digging, loading, mowing, carrying and other such tasks with hand-labor? . . . or should you bring-in specialized machinery? It's often only a choice between one high-cost method or another.

Resolve your cost problem with a Case 210B *Utility* Loader and attachments. This low-cost "handyman" completes multiple service assignments, fast . . . cuts hand-labor cost . . . frees your big, expensive, or special purpose machines for full-time duty on heavier jobs.

Gives you exceptional power and stamina for fast, economical handling of dirt, topsoil, street materials and snow.

It maneuvers easily, gets full loads quickly, lifts half-a-ton to 10'5", dumps clean with 8'5" clearance for fast dump-and-go. Quick-change attachments for loader give you lift-and-carry power for innumerable other materials and equipment you may be toting by hand.

Case 210B mows grass and weeds with 5' rotary mower; 5', 6', or 7' sickle mower; or gang mowers of your choice. It may also be equipped with rear blade, backhoe, auger, and many other manpower-saving tools.

FREE TO MUNICIPAL OFFICIALS . . . Complete file folder of specifications on J. I. Case *Utility* wheel and crawler tractors and matched equipment. Clip and mail coupon for your copy, today!

Costs your budget less than one man's wages

Case 210B *Utility* Loader with average set of attachments, plus gasoline, oil and maintenance, costs less than the annual wages of one man. On lease or extended terms, the cost runs less than *half* the wages for one man.

❶❷❸ LOADER BUCKETS, 11, 13 cu. ft.; ¾ cu. yd. Digs and loads dirt, bulk materials, snow. Carries soil, materials, nursery stock. Backfills, grades.

❹ CRANE BOOM handles pipe, tile, hydrants, light standards, boats.

❺ BACKHOE cuts trenches, footings to 10'.

❻ ALL-PURPOSE BLADE finish grades, cuts ditches, forms terraces, mixes.

❼ PALLET FORK moves construction materials, equipment, park tables and benches, waste, man hoist.

❽ MOWERS, all types. Mows lawns, fairways, fields, street shoulders.

J. I. CASE CO., Dept. ©1569, Racine, Wis.

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Forecasting and Assining Traffic Electronically

By S. E. RIDGE, Assistant Chief, Division of Development
Bureau of Public Roads, Washington, D. C.

The accelerated highway program can be expected to change the basic traveling and living habits of large segments of our population. This problem is brought more clearly into focus when we remember that over half of the Interstate funds will be spent in urban areas. In the old days, urban population tended to cluster along the trolley and railroad lines. Now we are using the automobile and highway facilities and have much greater fluidity of movement. The population movement will, however, still follow the transportation routes but now the buildup will be along the highways. How we plan our highways now is going to determine how our cities and countrysides are going to look thirty years from now. The fixing of the location of a highway, rural or urban, has, therefore, far-reaching economic and social consequences. We can build the roads but we need to use all the information available from the city planners, the business associations and from the various political subdivisions involved in determining the best locations.

Origins and Destinations

The determination of traffic demand through origin and destination surveys is a well developed though difficult technique. It is the foundation for all future highway planning. All too often we have found that great numbers of people have been forced to travel the long way around simply because we did not know where to put the road. An origin and destination survey in a large urban area yields a veritable mountain of data. Electronic computers are now being used to speed this work. In the past, it has taken as long as three years between the time an origin and destination survey was begun and the results tabulated. This must be speeded up if this valuable planning tool is to be effective.

The method of forecasted traffic distribution designed to handle differential growth was developed by Thomas J. Fratar during the course of the Cleveland origin and destination survey. All of the forecasting methods that employ the principle of successive approximations or iterations are called "growth factor" models. This name comes from the fact that the area under consideration is divided into many small areas or zones and the future traffic growth for each zone determined separately.

The determination of zone growth factors requires that the engineer have the aid and cooperation of the city planners, the political subdivisions, the merchants' associations, and all other interested groups. Most urban areas have rather strict zoning ordinances. These have a very definite effect on future traffic growth. For example, one city found it necessary to restrict the growth of many square miles of the area upstream from the city to a density of not more than 30 persons per acre to protect the watershed. The business people know a great deal about where new commercial and industrial areas will locate. Population experts can foretell quite accurately the total population of an urban area. Exactly where in that urban area the people are going to concentrate requires more exhaustive study. The tax laws have a great deal to do with the growth of one area as opposed to another. The determination of growth factors is a team proposition requiring the support of all the local planning agencies.

Electronic Forecast

Once the growth factors are determined, an electronic computer can produce a forecast of the zone-to-zone traffic volumes in a few hours. The Bureau of Public Roads has developed programs for this purpose using the largest and fastest computers now available. This was necessary because of the large volume of data to be handled. A large urban area having five hundred traffic zones in it would produce 125,250 $\frac{[n(n+1)]}{2}$ records of desired traffic movement if all possible zone-to-zone movements are accounted for. The Fratar method of forecasting requires that the data be processed three times for the first iteration and twice for every iteration thereafter. Three iterations are generally sufficient. This means then that 125,250 records must be processed seven times or an equivalent of 876,750 records.

Selection

After the future zone-to-zone traffic volumes are obtained, the job of selecting an integrated system of expressways to handle the anticipated volume remains. In order to do this, the forecasted zone-to-zone volumes must each be assigned to the most logical existing and proposed facilities and these results accumulated citywide in order to arrive at the traffic volume data required for geometric design.

To be properly done, the whole process should be repeated many times to find which configuration of expressways will provide the most service for the forecasted traffic volumes at the least cost in much the same manner as several alternate locations for a rural highway would be investigated. The large high-speed computer is coming to our aid. The engineer could not possibly calculate the best two time-paths for each zone-to-zone movement by manual methods. It would take him too long. He was forced to estimate, based on judgment and intuition, by his own personal knowledge of the city. The Bureau of Public Roads in cooperation with the District of Columbia now has under development a computer program* that will accomplish all this at electronic speeds.

* The program is being developed under the direction of Mr. W. L. Mertz, Highway Engineer, Division of Development, Office of Operations, and Mr. G. E. Brokke, Highway Research Engineer, Highway Planning Division, Office of Research, Bureau of Public Roads.

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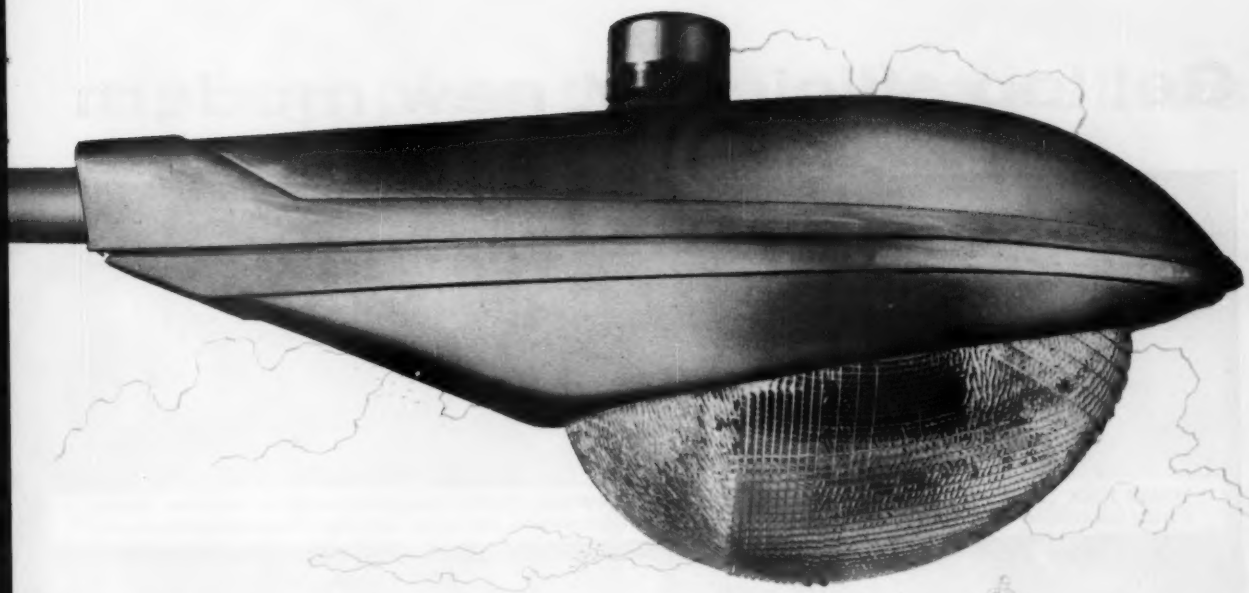

New beauty, efficiency, safety for every street and highway

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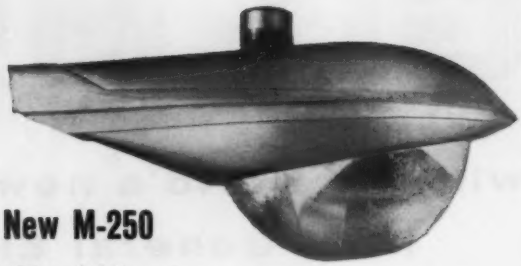
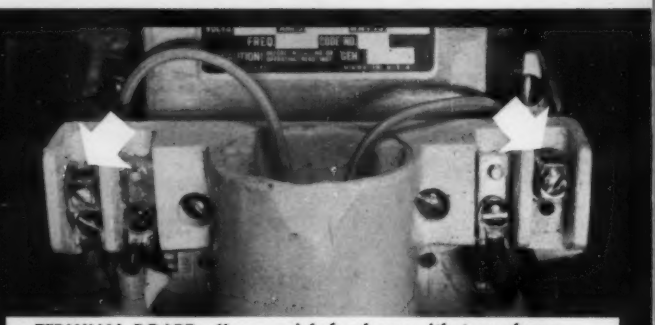


New M-250

175 and 250 watt
residential and light-traffic streets

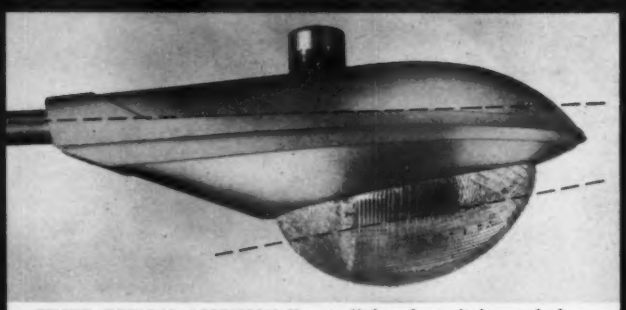
Get top efficiency, new modern

POWER PACK built-in ballast saves $50-75 per unit during installation—175- to 1000-watt sizes.

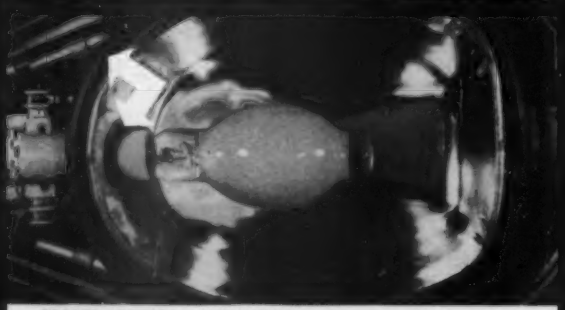


TERMINAL BOARD allows quick hook-up with two clamp-type screws; eliminates splicing, other interconnections.

UNIVERSAL SLIPFITTER easily adjusts for 1¼- or 2-inch brackets. Requires no additional parts.

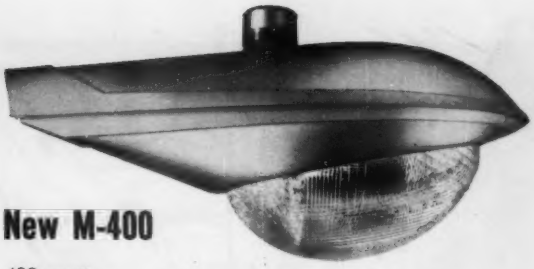


TILTED OPTICAL ASSEMBLY directs light where it is needed, contributes to graceful styling.



SEALED OPTICAL ASSEMBLY—silicone rubber gaskets block entry of bugs and dust, reduce cleaning.

UNIT PHOTOELECTRIC CONTROL with dependable new G-E cadmium sulphide cell locks on top of unit.



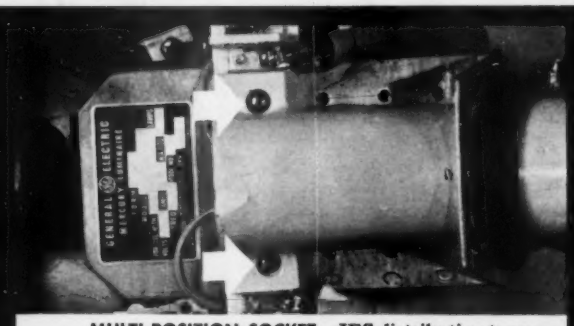
New M-400

400 watt
business and traffic streets, highways

New M-1000

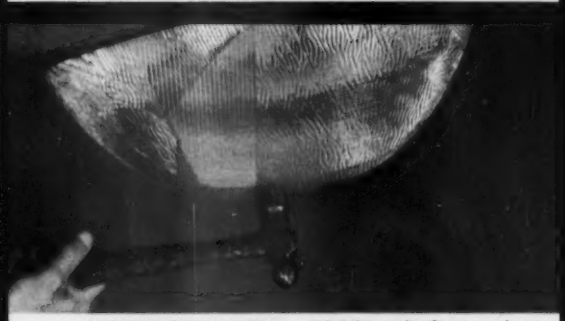
700 and 1000 watt
whiteways and shopping centers

styling, plus these extra values



MULTI-POSITION SOCKET—IES distribution types are easily selected by simple screw adjustment.

LAMP FLEXIBILITY—complete lamp selection—clear, white, color improved, 175 to 1000 watts.



ACRYLIC REFRACTOR on M-250 unit, heat-resistant glass refractors on other units, cut breakage.

Smart styling . . . unequalled efficiency . . . economical operation . . . all are yours with new General Electric mercury luminaires. And, for the first time you'll find ratings for every street and highway *in a single design family*. 100% designed by General Electric — with components engineered to work together—this new mercury line delivers these major user benefits:

Unparalleled photometric performance — Precisely contoured reflector and proven prism design give optimum light output and control.

Unequalled electrical efficiency — Built-in "Power Pack" ballast, first introduced by G.E., provides lowest "watts loss" in the industry; available in all ratings.

Wide flexibility—IES distribution types may be selected by simple movement of adjustable socket. Mount on either 1¼- or 2-inch bracket with universal slipfitter.

Low installation and maintenance costs—Easy access to all components, convenient two-connection pre-wired terminal board for wiring, unitized construction make installation simple. Long-life ballast, positive gasketing, heat-resistant glassware minimize maintenance.

Get full information from your General Electric Apparatus Sales Engineer or Agent today or use the coupon below.

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Section B450-5, General Electric Co., Schenectady 5, N. Y.

Please send me free bulletins on the subjects checked below:

☐ New Mercury Luminaires, GEA-6943

☐ Cadmium Sulphide Photoelectric Control, GEA-6987

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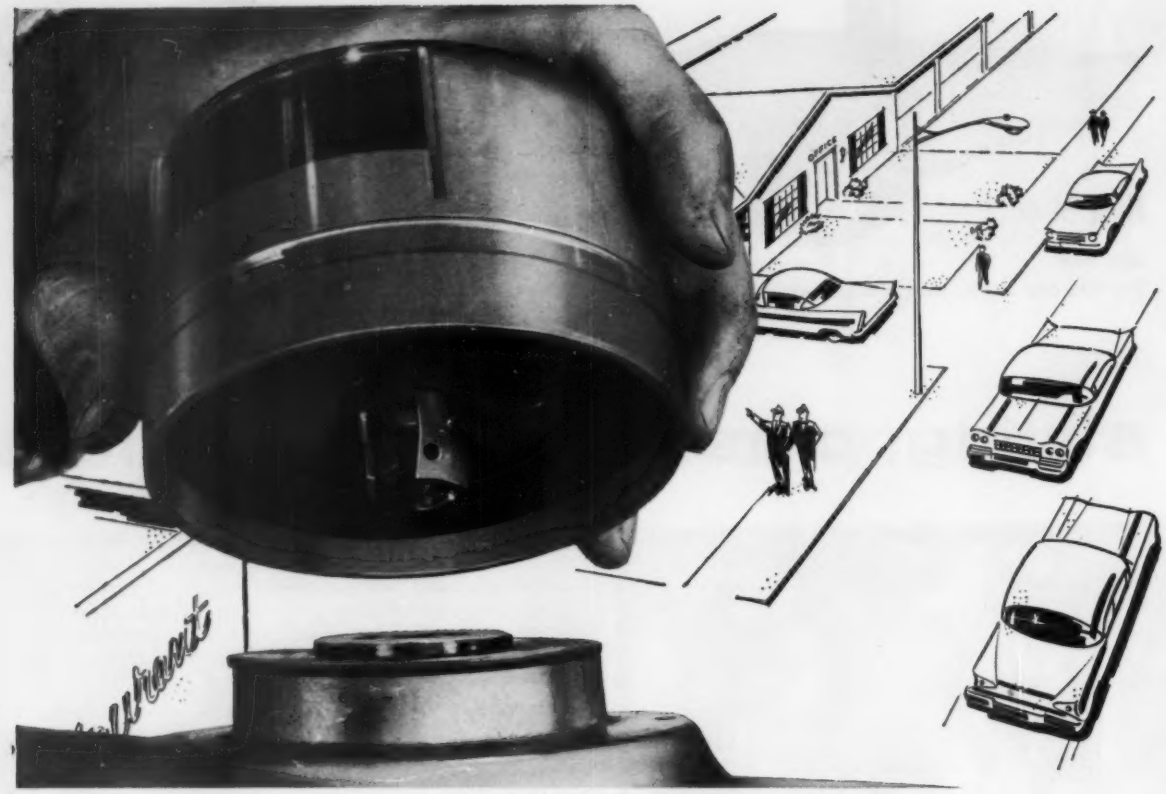

Reliable—after years of tests

New G-E cadmium-sulphide control installs in seconds . . . lasts for years

Now, from General Electric comes the industry's newest, most dependable cadmium-sulphide photoelectric control. Years have been spent in the research, design, and testing of this new street lighting control to produce the most efficient, most reliable cadmium-sulphide control available. Now, after exhaustive testing, the reliability problem has been solved with a custom-built General Electric cadmium-sulphide cell. Shock, surge, humidity, vibration, load, temperature—these were among the tests conducted —but none was found to alter the dependable performance of the new G-E control.

Addition of the new cadmium-sulphide cell is but part of the story. General Electric has developed a new, simplified circuit with specially-engineered long-life components . . . designed and built to work together and to reduce your control costs.

Get the full details from your General Electric Apparatus Sales Engineer or Agent, or write Section 450-25, General Electric Company, Schenectady, New York.

ADVANCED DESIGN FEATURES give: (1) dependability from new G-E hermetically sealed cadmium-sulphide cell; (2) long life from specially-engineered components; (3) built-in protection from voltage surges; (4) power savings through accurate external adjustment. NO VACUUM TUBES OR RECTIFIERS.

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Baltimore's Street Lights Tonight

By WALTER L. BUCKINGHAM
Superintendent of Lighting
Mechanical-Electrical Services
Baltimore, Md.

Union Metal aluminum poles in residential district and fluorescent luminaires on steel davit poles on the Baltimore Harbor Tunnel project.

Ten years ago the City of Baltimore started a program to convert 16,500 gas lamps to electric lamps. This project was brought to a satisfactory conclusion on August 14, 1957, when Mayor Thomas D'Alesandro, Jr. extinguished the last of the colorful but obsolete gas lamps in Baltimore. This occasion completed 140 years of gas lighting in the city for the first gas lamp in America was installed in Baltimore in the year of 1817.

Approximately 80% of the gas lamps were on residential streets, the remaining on primary and secondary arterial thoroughfares. With the constant improvement of luminaires for incandescent, mercury and fluorescent light sources, the use of these modern lighting facilities was incorporated in the program. Lamp standards of steel and aluminum, having mounting heights of 23 and 30 feet, were used in the majority of installations with a few 9-foot steel standards erected on heavily foliaged residential streets under 30 feet in width.

Incandescent light sources from 1600 to 4000 lumens were used on the 9-foot standards and 6000 to 15,000 lumens were used on 23-foot standards. On the 30-foot steel and aluminum units, 400-watt mercury, both clear and fluorescent were installed. In a few instances, 2700 to 21,000 lumen fluorescent units were employed. These were mounted on 17-foot davit aluminum poles.

In line with the above lighting improvement, intensive candlepower increases were initiated, and since 1948 a total of 13,443 electric lamps were increased in candlepower from 82 to 400%. These increases were on dark residential streets and at hazardous and channelized intersections.

One of the old 12-foot white-way poles being removed.

Mercury Vapor Units

Mercury vapor street lighting in Baltimore has increased from 30 units installed in December 1952 to 2,000 units in service January 1, 1959 and all but 260 of these 400-watt clear mercury units have been installed on primary arterial thoroughfares and interchanges; the remaining fluorescent mercury 400-watt units being employed in modernization of the downtown lighting system. All mercury units were installed with a 30-foot mounting height and utilizing from 6- to 16-foot bracket arms. The modernization of 265 old white-way electric lamps was completed this spring in a portion of the downtown section and provides 1.2 footcandles on these streets. Future conversion of 600 white-way lamps awaits only the funds.

The first section of the Jones Falls Expressway to carry heavy northbound and southbound traffic from the central section of the city to a point 7 miles away at the northern city line is under construction. This expressway is part of the Bureau of Public Roads nationwide highway system and 90% of the funds necessary for this installation will be provided by it. In connection with this new highway, interchanges, bridges and underpass lighting is involved. In contrast to the fluorescent highway lighting installations on

60,000 cars per day moved thru Dallas intersection

by

ELECTRO-MATIC®

TRAFFIC CONTROLS

Traffic conditions at the intersection of Northwest Highway and Preston Road in Dallas, Texas indicated the necessity of volume-density signal control. An average daily volume of 60,000 cars, sharp peaks, heavy left turns and intermittent pedestrian requirements all contributed to intensify the problem.

To insure a successful solution, the City of Dallas installed an Electro-Matic Model 1033 Volume-Density Controller. Now traffic moves through this intersection freely, and without unnecessary delays.

For literature describing this equipment write for Bulletin C-135D.

AUTOMATIC SIGNAL DIVISION

EASTERN INDUSTRIES, INC. • NORWALK • CONNECTICUT

to the fluorescent highway lighting installations on

OUTDOOR LIGHTING

the Baltmore Harbor Tunnel, completed by the State of Maryland, the City of Baltimore will install high intensity 35,000-lumen fluorescent mercury vapor lighting on the Expressway. Close cooperation between the Expressway Division of the city's Bureau of Highways, the Baltimore Gas and Electric Company and the various consulting engineers has been obtained, thus resulting in smoother construction and installation operations. Considering the use of fluorescent mercury vapor lamps on this project, the Type III distribution which is required became quite a problem. However, two of the manufacturers of mercury vapor luminaires have produced units that have been approved. Since the width of the roadway to be illuminated will be 90 feet, curb to curb, with an additional 8 feet of shoulder on either side, utilization of staggered spacing instead of the conventional parallel lighting will provide substantial monetary savings without the loss of normal minimum to maximum light ratios required.

To effect further economies, we requested the utility to use, if practicable, the 460/480 multiple system employing high reactance ballasts of 1000-watt rating having a 70-watt tap. The use of these ballasts will provide a quick changeover to higher intensity lamps, if required in the future.

Provisions for underground crossovers and lamp standard foundations will be provided for continuous lighting in the future. In order to control as much as possible eye-adaption from one interchange to the other the lighting for 7 spaces, approximately 910 feet, will diminish from 35,000 lumens to 10,000 lumens and these locations, without additional cost of rearrangement, may be used for continuous lighting in the future. Considering that the Expressway has been designed for speeds of 55 and 60 miles per hour, diminished lighting will not be used between interchanges that are 3,000 feet and under. It will however, be carried out between interchanges that are over this length.

City Owns It

The city will assume complete ownership and maintenance of this system. This kind of installation will conform to the recommendations of the Bureau of Public Roads and the recommendations cited under Title 23, United States Code, entitled, "Highways" (as enacted by Public Laws 85-767, 85th Congress, H.R. 12776 passed August 27, 1958), Section 109, sub-sections (a), (b) and (c):

(a) The Secretary shall not approve plans and specifications for proposed projects on any federal-aid system if they fail to provide for a facility (1) that will adequately meet the existing and probable future traffic needs and conditions in a manner conducive to safety, durability, and economy of maintenance; (2) that will be designed and constructed in accordance with standards best suited to accomplish the foregoing objectives and to conform to the particular needs of each locality.

(b) The geometric and construction standards to be adopted for the Interstate System shall be those approved by the Secretary in cooperation with the state highway departments. Such standards shall be adequate to accommodate the types and volumes of traffic forecast for the year 1975. The right-of-way width of the Interstate System shall be adequate to permit construction of projects on the Interstate System up to such standards. The Secretary shall apply such standards uniformly throughout the states.

(c) Projects on the federal-aid secondary system in which federal funds participate shall be constructed according to specifications that will provide all-weather service and permit maintenance at a reasonable cost.

400-watt clear mercury vapor street light mounted on 30-foot aluminum pole in the Baltimore business district.

John Boyter On Antiquated Street Lighting

A three-year relighting program in Gary, Ind. showed a 53% reduction in after-dark traffic fatalities following relighting. This and similar facts were given the Charlotte, N. C. Engineers Club by General Electric's John C. Boyter.

The night-time deaths in Gary were cut from 43 for the year just prior to the relighting to 20 for the first year following, in spite of a 27% rise in Gary's population and a 68% increase in vehicle registration.

Mr. Boyter called post-top luminaires and "tin pie-plates" holding bare bulbs embezzlers of the taxpayers' funds.

Pointing out the need for adequate lighting on rural highways, Mr. Boyter said the average night-time motorist is "aiming a 2-ton mass of steel down a tunnel of darkness with only two 150-watt headlamps to replace sunshine."

There were 406 deaths before lighting was installed in 28 study areas across the nation and only 133 afterwards—a 67% reduction.

OUTDOOR LIGHTING

Uniform roadway lighting on the new Manahawkin Causeway bridge is supplied by the General Electric fluorescent luminaires mounted 50 inches above the roadway surface in the aluminum bridge railings.

Low Lighted Bridge

"Waist-high" fluorescent roadway luminaires supply illumination for beach-bound motorists as they cross the new $12 million Manahawkin, N. J., Causeway Bridge. The 768 General Electric units are in the aluminum railings 50 inches above the road.

Light rays are directed across the bridge's four-lane concrete roadway at right angles to traffic. The 42-inch-long fixtures are spaced about two feet apart along the 2,400-foot span providing an even illumination over the roadway.

The New Jersey Highway Department listed several advantages of this low level lighting, including elimination of glare, all light directed on the roadway, leaving the parapet in shadow, thus directing the drivers' attention to the roadway, greater effectiveness in fog, rain or snow because of the horizontal direction of the light, and easier servicing without any roadway obstructions since the fluorescent luminaires are readily accessible from the bridge walkways.

Close-up of one of the low horizontal lights on rail of the Manahawkin N. J. causeway bridge.

Henkels and McCoy of Philadelphia were the electrical contractors on this project, part of N. J. Highway 72, connecting Manahawkin with Ship Bottom on Long Beach Island. The Michael Flynn Mfg. Co. of Philadelphia supplied the extruded aluminum rails and the Atlantic City Electrical Company supplies the power

Lighting Plaque for Brookings, S. D.

Senator Karl Mundt (R., S.D.) addressed the Hendersonville Executive Club in Hendersonville, N. C. and accepted a plaque on behalf of the Brookings, S. D. City Commission in recognition of the nation's first complete all-fluorescent street lighting system (see THE AMERICAN CITY for February 1959).

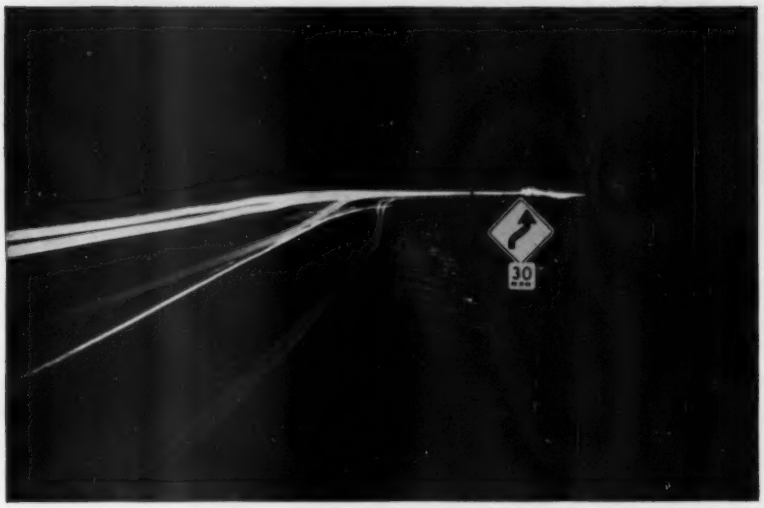
In 1958 Brookings completed installation of an all-fluorescent street lighting system that illuminates every mile of urban street to the brightness recommended by the Illuminating Engineering Society. Only a dozen cities in the nation have lighted all city streets to the IES-recommended levels and none of these used fluorescent lighting units exclusively.

The plaque, presented by Marketing Manager Henry J. Chanon of the Outdoor Lighting Department of General Electric Co., reads in part:

"In recognition of becoming the first American city to have fluorescent lighting on every street in accordance with Illuminating Engineering's code levels, this award is made to Brookings, S. D., and to the progressive residents and city officials who made this possible."

Mayor Homer Dwiggins and Commissioners W. J. Burdett, W. H. Gamble, L. H. Monteith, and L. J. Wiese are cited on the plaque for their contributions in making possible the new lighting system.

Why over 700 cities and counties get better signing at lower cost



With a vacuum applicator in your sign shop, you can make all types of professional traffic signs for roads and streets—reflective signs that guide motorists safely and surely day and night.

Fabrication of professional traffic signs with an automatic vacuum applicator is the method now in use by over seven hundred cities and counties to get better signing at lower cost.

The starting point for savings is refurbishing old signs right in your own shop. You can give your old signs new faces in a matter of minutes in an applicator...and actually, you can switch over to red stop signs for as little as $3.60 per sign.

For additional savings, look at those projects you have wanted to start but, perhaps, put off because you thought they might be too costly. Projects like new reflective street name signs, hazard markers—distinctive trailblazers and guide signs that direct motorists day and night for city parkways or county roads. Faces for these signs can be made to order for you at lower cost than you think. All you have to do is apply the face to your sign blank in your applicator. Takes only five minutes.

For instance, you can reflectorize street or road name signs in a 3′ x 4′ applicator that turns out 10 or more of these 6″ x 24″ signs every five minutes.

Or you can make 8″ x 36″ bridge end markers to reduce the danger of darkness with any bridge hazard in your area—for as little as $1.95 per marker face.

Important, too, is the fact that operating an applicator is so simple you don't need specially trained men to make reflective signs. Production is fast—so you won't need extra people in your sign shop even during the busy spring season. When maintenance crews are idled by weather conditions their time can be more fully utilized by sign making jobs in the shop.

Vacuum applicators are available in a variety of sizes—including this new, table top "Economist" model. Designed for small shops, it produces nine 24″ x 24″ reflectorized signs per hour at low cost.

Your 3M Representative can tell you more about how to get the most out of your vacuum applicator—to put more into your signing program. You can get complete information by writing: 3M Company, Dept. RKB-79, St. Paul 6, Minnesota.

Anyone can operate a vacuum applicator—no special training is needed. You can make signs any time you need them—and give your community better safety with better signing at low cost.

MINNESOTA MINING AND MANUFACTURING COMPANY
...WHERE RESEARCH IS THE KEY TO TOMORROW
St. Paul 6, Minnesota

REG. U. S. PAT. OFF.
SCOTCHLITE
BRAND
REFLECTIVE SHEETING
The term "Scotchlite" is a registered trademark of 3M Co.

For Globe Cleaning And Lamp Replacement

Three Strato-Tower hydraulic aerial platform units are maintaining street lights in Cleveland, Ohio. These units provide a working height of 35 feet for the maintenance man.

"With these new trucks we can at least double our cleaning rate," said Vincent DeMelto, city light and power commissioner. "We've been trying to clean each street light twice a year. I'm sure we can do much better now."

Complete specifications are available to officials who direct inquiries to Strato-Tower Division, Young Spring & Wire Corporation, P. O. Box 103, Elkhart, Indiana.

Operator John McNeely and Mayor A. J. Celebrezze in the fibre glass basket insulated for 100,000 volts.

Kingsport, Tenn., Modernizes

A new mercury vapor lighting installation in the shopping area of Kingsport, Tenn., is the latest in a series of municipal improvements. Its purpose is to promote new businesses, safer traffic and less crime.

At the light-up celebration sponsored by the City and the Kingsport Utilities, spectators witnessed a transition from 6,000-lumen lighting into tonight's 20,000-lumen scene.

The city is located in industrialized northeastern Tennessee, and it keeps aware of the things that attract industry and people. Recent improvements include a sewage treatment plant, connecting sewers, a well-planned city shop and garage, schools, improved streets, as well as a new post office.

The new lighting system was installed and energized by Kingsport Utilities after study of various systems had been made by a special lighting committee appointed by the City Board.

A mercury vapor system was selected and 210 luminaires, manufactured by Line Material Industries, were installed. Each luminaire operates a 400-watt, 20,000-lumen lamp. Superior photometric control insures high-intensity lighting on the streets. The majority of units are mounted on 30-foot steel poles with an average 77-foot staggered arrangement. An economical installation was achieved by utilizing existing 6.6-amp series circuits where practicable. Some lamps operate from a multiple system.

C. K. MARSH, *City Manager*
Kingsport, Tenn.

Facing north on Broad Street, whose buildings present a pleasing appearance as poles, supports and luminaires blend harmoniously with the surroundings.

This meter stops revenue-robbers

Rockwell-built Dual single automatic meters are the only automatic meters with entire mechanism enclosed and protected by rugged inner case.

Many parking meters can be tripped or jammed easily with a wide range of objects . . . every time this happens it means lost revenue and mounting repair costs for some community. This can't happen to Rockwell-built Dual Parking meters because the rugged stainless steel coin passage is closed as the clock is engaged, making it impossible to get at the timing mechanism with popsicle sticks, paper clips or other objects. This *proven* tamper-proof design is just one more example of the built-in quality that pays profitable dividends year after year to communities using Rockwell-built Dual Parking meters.

Whatever your parking meter needs, there are Rockwell M-1 Manuals, Dubl-Duals and Automatics to help solve your metered traffic control problems. Why not have a Rockwell parking meter specialist call on you soon? He represents 25 years of experience in the profitable solution of parking meter problems. Dual Parking Meter Company, Subsidiary of Rockwell Manufacturing Company, Pittsburgh 8, Pa.

DUAL PARKING METERS
another fine product by
ROCKWELL

SEND COUPON FOR FREE DETAILS

Rockwell Manufacturing Company
Pittsburgh 8, Pa.

☐ Please send details on the Dual Parking Meter line.

☐ Please have a Rockwell field engineer call.

Name:_____ Title:_____

Address:_____

City:_____ Zone:____ State:_____

PRISMO Presents New

REFLECTORIZED

Greatest Advance In Permanent-Type Marker Since Traffic Marking Began!

PLASTIX "SD"

No Get-Ready, No Equipment, No Warm-Up Needed!

PLASTIX "SD" is impervious to caustic and detergents, with an anti-pocking, anti-chip surface of excellent durability.

PLASTIX "SD" despite exclusive, highly superior advantages, is a remarkable dollar saver through simplicity of application and long life that achieve revolutionary economies. Outlasts paint by as much as 10 to 1.

PLASTIX "SD" Reaches Maximum Brilliance With Use . . . 24-Hour Reflective Efficiency.

PLASTIX "SD" is a brand new cold flow type Thermo-Plastic with improved tensile strength and non-buckling flexibility.

PLASTIX "SD" has Prismo's exclusive resealing qualities to insure pavement integration.

PLASTIX "SD" molds to the pavement contour *immediately*, becoming an integral part of the surface thru traffic pressure and sun-warmth.

PLASTIX "SD" hits a new high in abrasion resistance, dirt resistance, wear resistance and moisture "throw off". Positively skid-proof.

You can order Prismo **PLASTIX "SD"** *in reels, strips, blocks or pre-cut pavement legends. Write, phone or wire for illustrated bulletin PX56 showing versatile uses.*

PRISMO

SAFETY CORPORATION
HUNTINGDON, PENNA.

Fewer People Are Entering New York City

On a typical work day in 1956, 3.3 million persons entered the heart of downtown New York City. The striking fact is that this was 375,000 fewer people than had come to the region's hub on a similar day eight years earlier. For the first time since 1924 or earlier there was a decline in the total number of persons who traveled to Manhattan. This decline has persisted through 1958-59 according to the Regional Plan Assn.

Not only were well over 1½ million persons added to the region between 1948 and 1956, but more than 360,000 additional regional jobs were created as well. Yet, in the midst of this surging growth, the region's cultural and business hub stopped attracting increased numbers of people; in fact, the number entering actually started to decline.

What were the characteristics of the drop? Why did it happen? What does this trend mean for the future of the region? And particularly, what effect should it have on policies and programs for improving transportation to Manhattan? Answers are given in a 24-page bulletin produced by the Regional Plan Association, Inc., 230 W. 41 St., New York 36, N. Y. $5.

An increasing proportion of the persons who travel into lower Manhattan each day use automobiles and a decreasing proportion use the older forms of public transit (including subways, suburban railroads, buses, etc.). In spite of the overall decline in hub travel, Manhattan south of Central Park is now burdened with more cars each day than at any time in the City's history.

Decline in Mass Transportation

The 375,000-person net decline from 1948's high of 3,691,000 daily hub travelers was the result of decline in the patronage of the five modes of mass travel not fully balanced by gains in private auto, taxi and truck occupancy. Fewer people came in by subway, by trains, by ferry, and by trolley; and even the bus lines suffered a drop in riders.

While in 1924 private autos and taxis had carried only a little more than 10% of the total passenger load and 15 to 16% from 1932 to 1948, it swelled to over 22% by 1956. The shift to automotive transportation resulted in a jump in motor vehicles entering the lower half of Manhattan. By 1956, 137,000 more autos, taxis, buses and trucks came into the hub each day than had been driven to the area in 1948. It brought the total number of motor vehicles entering the hub each day to a new high of 519,300. (They carried just over one million persons.)

Enter the Exact Change Way

A new 1150-car municipal parking field where a toss of 35 cents into the basket opens the toll gate and a flashing yellow light and tell-tale alarm puts the finger on violators was opened March 19 in New York City's Borough of Queens.

The new $1,160,000 Rego Park Municipal Parking Field is the ninth and largest self-liquidating facility built under the Department of Traffic's $94,000,000 program to provide 40,000 off-street parking spaces within six years. It is the city's first lot equipped with electromechanical controls and counters.

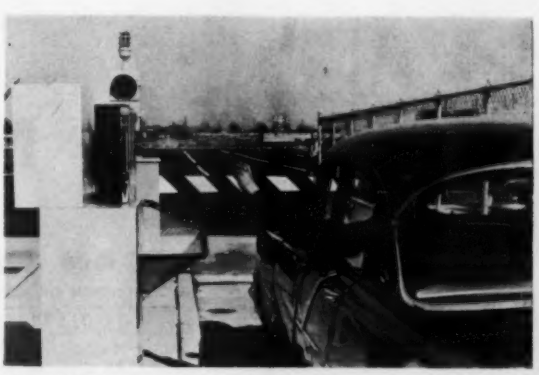
One section, to serve motorists parking on an hourly basis, has metered spaces for 290 cars. Rates are 10 cents an hour or 35 cents for twelve hours. The larger area, for 860 cars, takes care of all-day parking Here there is a flat charge of 35 cents for twelve hours or less.

The toll-collecting area for the larger field consists of three lanes. Treadle-activated counters, which record cars entering and leaving the field, activate the semaphore barrier gates. The feature is the "exact change" entrance.

A motorist drives up to the "exact change" entrance and tosses his money into the basket. Any combination of coins equal to, or greater than, the correct fee causes the traffic signal to change from red to green and opens the gate to allow the vehicle to proceed. After the rear axle of the vehicle crosses the treadle, the gate automatically closes behind the entering automobile.

If a car crosses the treadle without depositing the proper fee, however, the traffic light remains red, and a violation alarm is set off. A yellow light atop the standard 8-foot stanchion flashes, accompanied by a loud bell, to signal the violation.

The automatic parking system was designed and manufactured by Taller & Cooper, Inc., 75 Front St., Brooklyn, N. Y., a subsidiary of American Electronics, Inc.



A motorist tosses 35 cents into the basket of the Toll Collector at the "exact change" entrance to the new 1150-car Rego Park Municipal Parking Field, Queens, New York City. Other Taller & Cooper devices compute revenue collected and amount of space available and even detect mistakes.

Imitated ..but never duplicated

Let's face it . . . There is no substitute for experience and engineering know-how.

Only DUNCAN-MILLER, specialists for over 20 years in the development and production of "motorist energized" parking control equipment has the experience and know-how to meet modern equipment demands.

By comparing quality, past performance and customer experience prior to any purchase, results will clearly reveal why DUNCAN-MILLER has been selected in one out of every three cities throughout the world.

There is no substitute for a quality product backed by experience.

DUNCAN

DUNCAN PARKING METER
DIVISION OF MOTOR PRODUCTS CORPORATION
835 N. WOOD STREET • CHICAGO 22, ILLINOIS

Latest in Porcelain Enameled Signs

Sign on the Santa Ana Freeway, Los Angeles, Calif., has a honeycomb core with letters reflectorized with A.G.A. plastic buttons.

Data developed by the Oregon State Highway Department in a legibility study revealed that reflectorized white letters on a dark non-reflectorized background give the best night-time visibility and are satisfactory in daytime performance.

Placement is another concern of major importance in the safe handling of fast traffic. Whether placed on the shoulders of the roads and highways or overhead, even a highly visible sign that cannot be readily seen and read by the driver is of little practical value.

Two considerations that should govern the selection of a specific sign, according to Hugh Penton of California Metal Enameling Co. (6904 E. Slauson Ave., Los Angeles, Calif.) are: it must be of a size and a design to do an effective job of warning or directing at a particular location; and it must be manufactured to quality standards from a material that will give economical service over a long period of time.

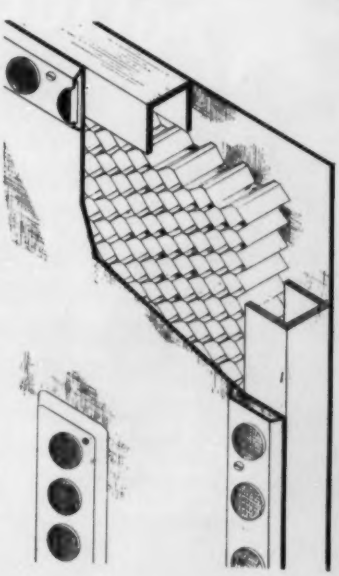
Steel porcelain enamel signs are notable for their long life. Many that were installed in California almost 50 years ago are still in service. The steel porcelain enameled signs originally installed on the Golden Gate and San Francisco-Oakland Bay bridges in 1936 are still as legible as they were originally, with no evidence of deterioration or fading.

Steel porcelain enameled signs have long been established as standard equipment in highway and road making systems. To these steel signs have recently been added two new types of porcelain enamel signs. One is an extruded aluminum porcelain enamel sign, and the other is an aluminum honeycomb cored porcelain enamel sign. Both are adapted to very large panels.

Extruded aluminum porcelain enamel signs have been widely tested on expressway and city throughways for several years. They are designed to resist wind forces up to 100 miles per hour.

Aluminum honeycomb-cored porcelain enamel signs have the very desirable attribute of light weight coupled with practically indefinite life. Although new to highway engineers, the honeycomb core has long been successfully used in the making of panels for the aircraft, missile and building construction applications in which panel rigidity must be obtained at the lowest possible weight.

Aluminum honeycombed panels are fabricated in sizes up to 5 feet high and 14 feet wide. Panels can be combined to form signs of any size. Because of their very light weight they are easily installed without hoists and expensive erection equipment.



This drawing shows construction of porcelain enameled aluminum sign with honeycomb core

Non-Reflectorized Pavement Markings . . .

HOW MANY LIVES WILL THEY COST TONIGHT?

The cost of reflectorizing pavement markings is extremely low . . . when you consider the lives that may be lost without it.

It is our firm belief that any stripe worth laying is worth reflectorizing. A great many traffic engineers hold this same view . . . and use Cataphote Reflective Traffic Beads to accomplish this purpose. Their records of reduced nighttime traffic fatalities . . . their records of longer marking life . . . prove it has been a wise investment.

If you'd like more information on Cataphote Reflective Traffic Beads . . . what you can do with them . . . what they can do for you . . . write today.

Cataphote
CORPORATION

TOLEDO 10, OHIO / JACKSON, MISSISSIPPI

Manufacturers of CATAPHOTE REFLECTIVE BEADS • CATAFLEX REFLECTIVE COATING • CATALINE REFLECTIVE STRIPING
CATATHERM REFLECTIVE PLASTIC STRIPING • TRAFFIC SIGNS • STREET NAME SIGNS

Simple Speeding Evidence

A report from Milwaukee, Wis. says that the city owns nine "Speed-Watches"; Appleton and Shorewood, Wis., two each; and that Racine, Wis., was the first city to adopt this type of traffic control. Advantages are low cost, simplicity, small maintenance, few officers needed. Here's the way it works:

The front wheels of a vehicle passing over a pneumatic tube starts a solenoid-operated stop watch. The front wheels passing over a second tube stop the watch. The reading is in miles per hour.

One-Man Operation

The equipment can be set up and taken down in a few minutes. One man operates it without a pursuit vehicle. Speeders are not stopped; the operator copies the car license number and the owner is ordered by mail to come to the police department and settle, since it has been established that the Speed-Watch is infallible. The device is being adopted by a large number of police departments.

The public understands this method because the basic unit is the familiar stop watch. The tubes are placed either 66 feet apart, for measuring speeds of 18 to 90 mph, or 132 feet apart for higher speeds.

Team of Milwaukee, Wis. officers Speed-Watches passing vehicles.

The manufacturer, Traffic House, Inc., Marshall, Mich., reports 2,000 Speed-Watches in use, 150 in Wisconsin police departments.

Do Large Red Lenses Reduce Collisions?

For many years the signs along the highways have been made in various sizes, large, medium, or small; but only recently has there been any significant change in the size of traffic signal lights. Traffic signals are probably watched more carefully by motorists than any other traffic control device, but few would note that on some of the arterial highways, red lights have become larger and easier to see.

Standard signal lenses are 8⅜ inches in diameter. The Illinois Division of Highways decided to try out some red lenses of 12-inch diameter. As soon as possible after these installations, the records of accidents were studied to learn if any benefit had been derived. The results appeared in the Division's "Highway Bulletin."

Twelve-inch red lenses were installed in the traffic signals at major intersections of Skokie Road in Lake County in May 1956. Periods of study were from June 1 to the end of 1955 before installing larger lenses and June 1 to the end of 1956 after installing them.

Nine intersections were studied. The first step was to make a simple count of the number of accidents at each location. The second step was to make a count of those accidents which might have been affected by the size of the lens. In virtually all cases, these were rearend collisions where vehicles waiting at the red light were struck.

It was found that the per cent of rearend collisions decreased in the after-period at five of the intersections and increased at four. At those intersections where the per cent of rearend collisions decreased there were 62% rearend collisions before and 37% afterward. The net decrease was thus 25%.

At those intersections where rearend collisions increased, there were 50% before and 65% afterward for a net increase of 15%. Details of the percents are given in the table below.

Intersections at which the percent of rearend collisions was lower in the after-period:

Intersection	Per Cent Before	Per Cent After
Illinois 173	50	33
Illinois 137	55	33
Westleigh Road	60	50
Berkley Road	100	25
Deerfield Road	44	40
Average	62	37
Net Decrease		25

Intersections at which the percent of rearend collisions was higher in the after-period:

Intersection	Per Cent Before	Per Cent After
Wadsworth Road	40	60
Illinois 120	32	48
Kennedy Road	83	100
Illinois 22	43	50
Average	50	65
Net Increase		15

If all eleven intersections are considered together it is found that there were 50% rearend collisions before and 43% after installation of the large lenses. While this decline of 7 per cent is not large, it is regarded as sufficient to justify continued use of large lenses at appropriate locations.

It is regarded as beyond the scope of this study to

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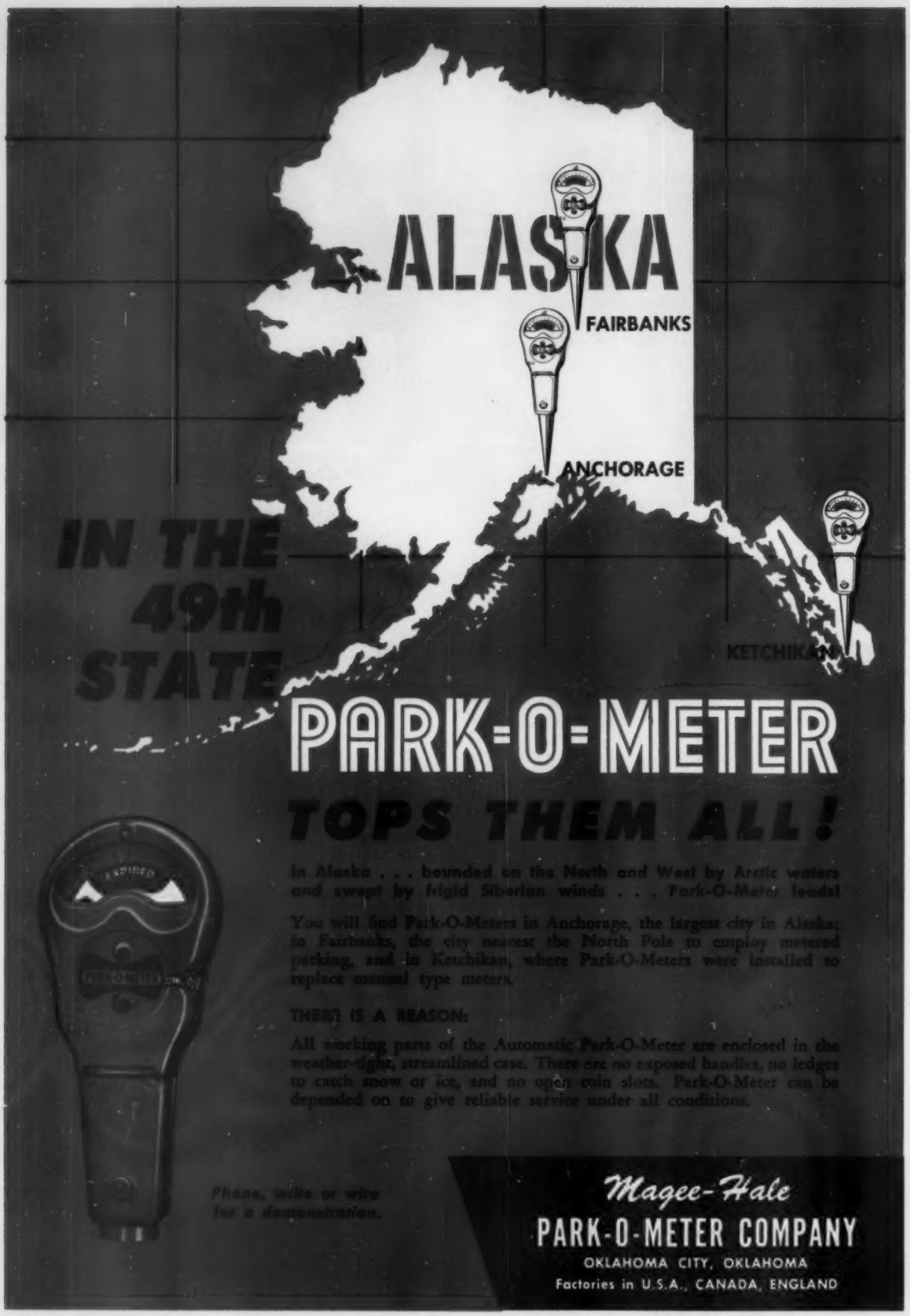

ALASKA
FAIRBANKS
ANCHORAGE
KETCHIKAN
IN THE 49th STATE
PARK-O-METER
TOPS THEM ALL!
In Alaska . . . bounded on the North and West by Arctic waters and swept by frigid Siberian winds . . . Park-O-Meter leads!
You will find Park-O-Meters in Anchorage, the largest city in Alaska; in Fairbanks, the city nearest the North Pole to employ metered parking, and in Ketchikan, where Park-O-Meters were installed to replace manual type meters.
THERE IS A REASON:
All working parts of the Automatic Park-O-Meter are enclosed in the weather-tight, streamlined case. There are no exposed handles, no ledges to catch snow or ice, and no open coin slots. Park-O-Meter can be depended on to give reliable service under all conditions.
EXPIRED
Phone, write or wire for a demonstration.
Magee-Hale
PARK-O-METER COMPANY
OKLAHOMA CITY, OKLAHOMA
Factories in U.S.A., CANADA, ENGLAND

attempt to pin-point the specific reasons for increases in accidents at some of the intersections. The main purpose of the study was to make a conservative statement of the effect of the large red lens, if possible. In order to do this, all side factors such as traffic volume and weather were excluded from the considerations and reliance was placed upon the accident count.

Rearend Collisions

It is assumed that increases in rearend collisions would occur at some locations and that these would be due to the characteristic of accidents happening at random, influenced by a complicated combination of conditions.

Since all of the intersections were on one predominating route, spaced at relatively short intervals, it is believed that the effect of conditions other than the size of the red lens was reasonably uniform and that the accident counts are a reasonable basis for a conservative statement regarding the effect of the lens.

Good News For Motorists

When a new parking lot was to be opened here in Martinsville, Va., the end of March 1959, a publicity sign was erected. It was painted in three colors.

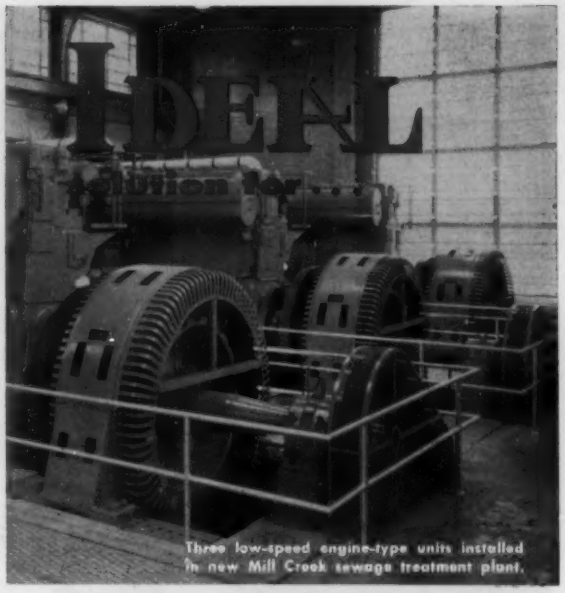
The lot has 63 spaces equipped with three-hour Park-O-Meters. The photograph shows the gravel surface which is base material. The lot will be covered with bituminous plant mix. Wooden strips were used temporarily to mark the parking stalls and will be replaced with painted strips after the black top application.

This is the third municipally operated metered lot

A 3-color sign apprises that a municipal parking lot is being born in Martinsville, Va.

in the central business area and brings the total number of off-street meter spaces to 243. The on-street meter spaces in the central business district total 238.

JULIAN F. HIRST
City Manager
Martinsville, Va.



Three low-speed engine-type units installed in new Mill Creek sewage treatment plant.

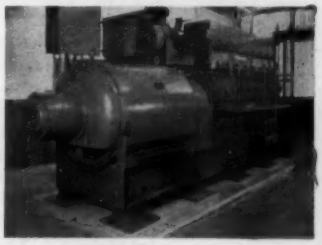
ideal performance at mill creek

Three IDEAL 1350 kw generators, coupled to 1910 hp diesels, turn at 327 rpm to provide power for pumping, comminution, flocculation, digestion and building lighting at Cincinnati's new Mill Creek Sewage Works. A fourth unit, to be installed prior to completion of the facility, will provide a total capacity of 120 million GPD. It's another example of IDEAL equipment selected for outstanding municipal power development projects where dependable power performance is important.

On the job in similar installations across the land and around the world, IDEAL low and high speed generators in ratings from 10 to 10,000 kw are designed and engineered to meet your exact requirements. You can depend on IDEAL's reputation for quality equipment earned in over a half-century of creative electrical engineering. When your specs say "IDEAL", it's the finest!

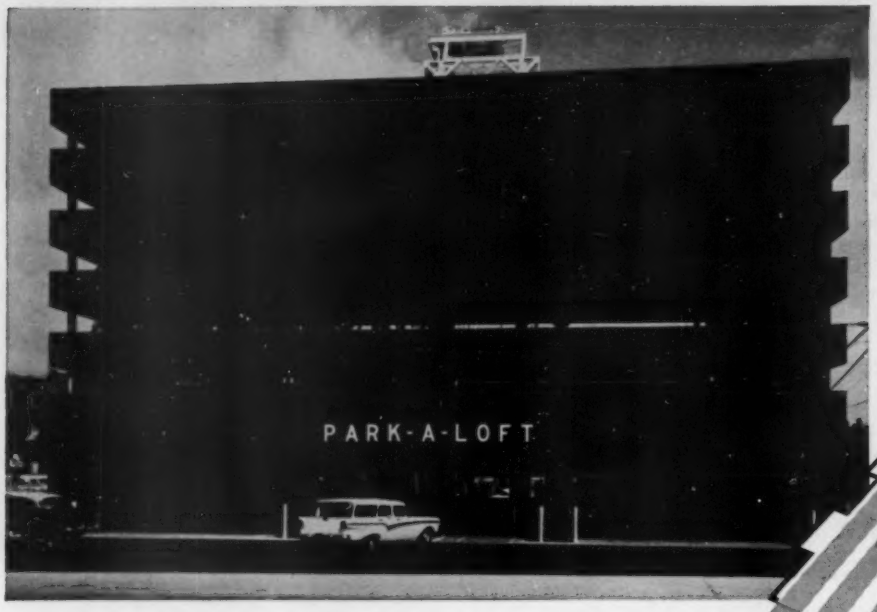
EMERGENCY STAND-BY

Typical high-speed unit installed on a diesel generating set in a Midwestern metropolitan telephone exchange. 50, 60 and 400 cycle, 10 to 4000 kw for any requirement.

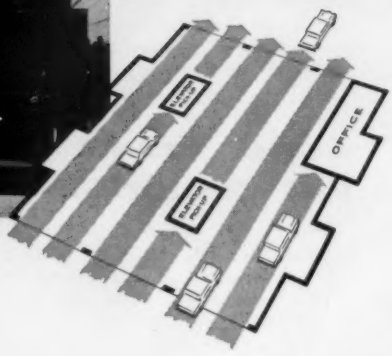


The IDEAL ELECTRIC & MANUFACTURING CO.
301 East First St. Mansfield, Ohio

SINCE 1903, AMERICA'S FINEST MOTORS, GENERATORS, MOTOR-GENERATOR SETS, SWITCHBOARDS AND CONTROLS



This Dresser-Ideco Park-A-Loft installation in Parkersburg, W. Va. handles 264 cars on 7 floors. Unlike other mechanical parking garages, Park-A-Loft produces parking income from the first floor. In fact, over 16% of this facility's parking capacity is on the ground floor, an important producer of bonus income. (Below) First floor traffic-flow diagram for Parkersburg installation — note reservoir space, straight-through traffic flow.

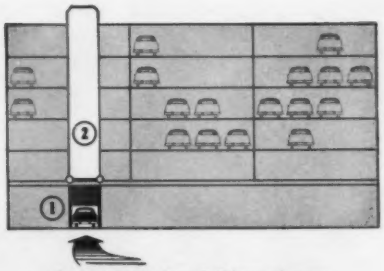


Newest idea in a mechanical garage

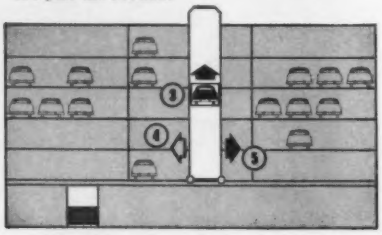
PARK-A-LOFT® produces first-floor income, takes traffic surges off the street in a hurry

Park-A-Loft, Dresser-Ideco's new mechanical parking garage, pays for itself from the ground floor up. No other mechanical garage is so efficient. Unlike all others, Park-A-Loft produces parking income from practically the entire first floor — and can handle traffic surges easily and quickly. More parking capacity, more income, with Park-A-Loft's efficient use of high-cost down-town lots.

Park-A-Loft's efficient utilization of ground floor space results from its unique tower-elevator system. The tower rides on rails at the second floor level, clears the ground floor of space-wasting tower travelways, leaves floor free for maneuvering and parking. The two-dimensional tower elevator system saves car handling time by **simultaneously** raising the car to upper floors and moving right or left to a preselected stall. Another exclusive feature of Park-A-Loft is a car dolly that automatically adjusts to the correct length for any car, lifts it at the same 3 safe points — under both sides of the front suspension frame, and under the differential.



Park-A-Loft does 2 things at once
(Above) Dolly picks up car at elevator station (1) on first floor, carries it into elevator. Note elevator tower (2) in position directly above. **(Below)** As elevator rises into tower (3), wheel-mounted tower **simultaneously** travels either left (4) or right (5) along face of parking stalls. As tower travels, elevator within tower rises to selected level. At desired parking stall, elevator and tower stop; Park-A-Loft dolly carries car into stall and deposits it. Entire sequence of operations takes only seconds. De-parking operations are just the reverse.



The features of Dresser-Ideco's Park-A-Loft mechanical garage are so new, so vital in assuring efficient operation, you should get all the facts about them. Let us show you our color, sound movie of actual parking operations at the Parkersburg installation. And write for the illustrated Park-A-Loft folder.

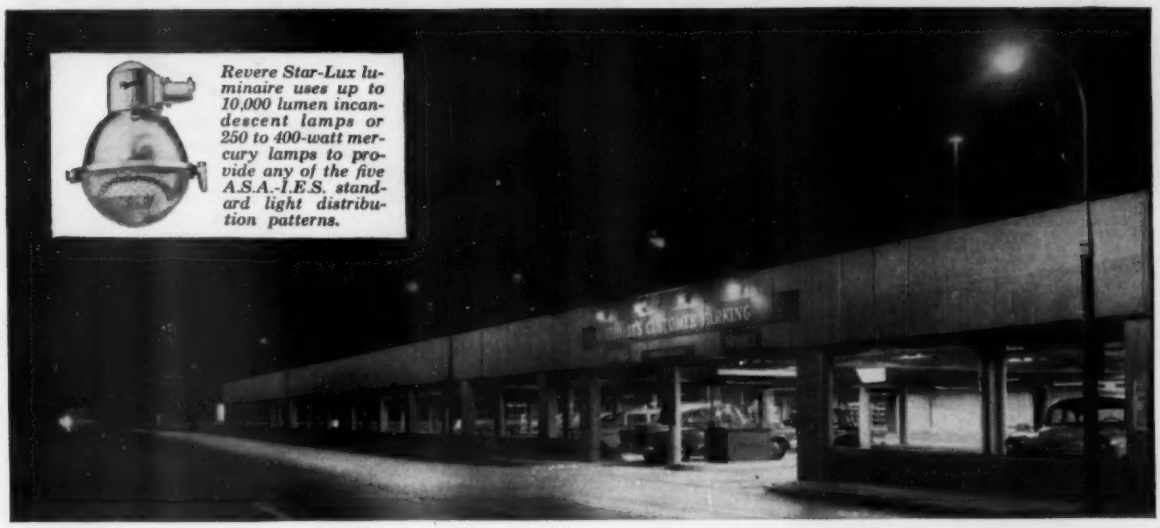
Dresser-Ideco Company
DIVISION OF DRESSER INDUSTRIES, INC.
PARK-A-LOFT DIVISION, DEPT. P-95, 875 MICHIGAN AVE., COLUMBUS 8, OHIO

DRESSER IDECO

Daytime scene of River Forest, Illinois street using Revere Star-Lux incandescent street lighting luminaires on converted concrete poles.

REVERE PLANNED STREET LIGHTING

Revere Star-Lux luminaire uses up to 10,000 lumen incandescent lamps or 250 to 400-watt mercury lamps to provide any of the five A.S.A.-I.E.S. standard light distribution patterns.



Planned street lighting demands different types of lighting for different traffic conditions. As the night photograph shows, the Revere Star-Lux provides moderately-traveled streets with uniform, moderate-intensity lighting . . . efficiently and economically.

The Star-Lux is a versatile and efficient member of the reliable line of Revere street lighting equipment. Recently-developed features of the Star-Lux include a built-in ballast compartment in the fixture head and a twist-lock plug in the head to accommodate a photo-electric control unit. Write for Revere Street Lighting Catalog.

Other luminaires in Revere's complete line

For heavily-traveled streets—Revere Endoval uses 11,000 or 21,000 lumen mercury lamps for high level illumination. Reversible slip-fitter for mounting horizontally or with 10° tilt.

For residential streets—Revere Urban-Lite makes efficient use of 100, 175 or 250-watt mercury lamps for uniform light in areas where lower intensity light is adequate.

Revere ELECTRIC MFG. CO.

OUTDOOR LIGHTING

Revere Electric Mfg. Co. • **7420 Lehigh Ave.** • **Chicago 31, Ill.**

Available in Canada thru Curtis Lighting, Ltd., Leaside, Toronto, Ontario

The American Water Works Association's National Convention — an important event in helping you keep pace with progress.

And a good time to find out for yourself the advantages that Calmet Meters have to offer: sustained accuracy, long life, less maintenance, greater revenue.

Just ask the men who know from first-hand experience!

See famous Calmet Meters on display at the Convention.

WORTHINGTON
CALMET METER DIVISION
2301 SO. MAIN
FORT WORTH, TEXAS

Chicago Upgrades Air Purity Rules

Drops smoke density as basic regulation, extends controls, encourages research

By M. A. FISHER and RADNER,
Armour Research Foundation,
Illinois Institute of Technology, Chicago, Ill.

A new air-pollution control ordinance, which went into effect on May 1, represents much more than a mere revision of the regulations for the control of air pollution in Chicago. While it revises emission limits and brings them up-to-date, it places major emphasis on increased efficiency in the administration of air pollution control measures and orderly progress through sound research and technical development programs. The new ordinance extends the authority of the Air Pollution Control Department to cover air pollution produced by various chemical and manufacturing operations in addition to all types of combustion processes. The previous ordinance was purely a smoke abatement code, controlling only pollutants discharged with products of combustion.

Recognizes Differences

The new ordinance recognizes the basic differences in the operating methods of various types of installations and in their abilities to meet specific emission limits when operated in an economically feasible manner under good operating practices. It also places different and more restrictive limitations on emission from those new plants which can be designed and operated to produce less smoke and particulate matter emission than older existing plants. However, it requires the older plants to raise their performance to the standards of the new, over a period of five to ten years.

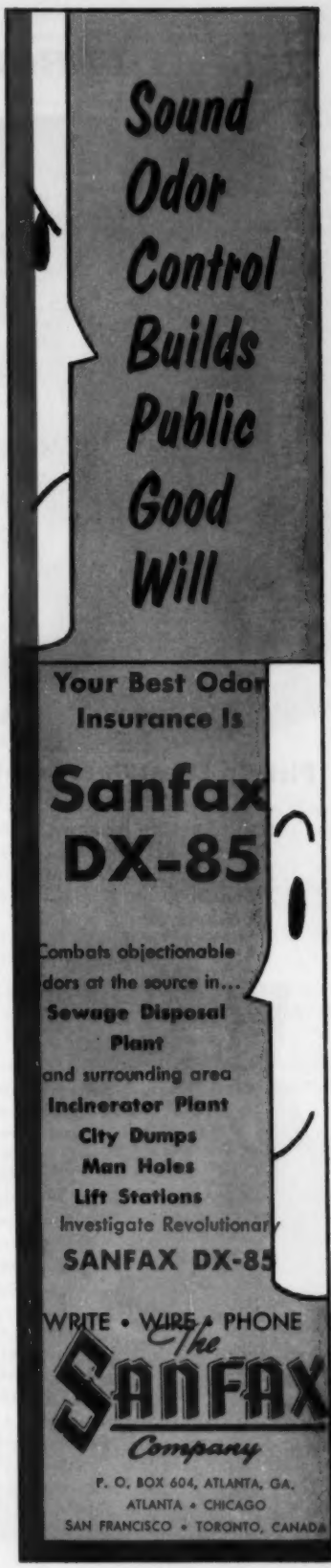
The ordinance is not arbitrarily inflexible. It provides an appeal board of five members who conduct hearings on appeals from Department decisions and pass upon applications for extensions of time for compliance.

The ordinance still regulates smoke emission by Ringelmann density measurements. However, it divides all combustion or process equipment into four classes; it differentiates between heating plants and other types of smoke producers and also between existing plants and newly constructed or reconstructed plants. Smoke emission is limited in terms of allowable duration and Ringelmann shade of smoke for each class of equipment.

The ordinance places a basic limitation on the emission of particulate matter at 0.35 of a grain per cubic foot of gas, measured at standard conditions. Of this no more than 0.21 of a grain per standard cubic foot may consist of particulates retained on a 325-mesh screen.

It establishes special emission limits for certain processes, in recognition of existing technical limitations in their operation. This group includes locomotives, cupolas, heating and reheating furnaces, air furnaces, and steamships. It also exempts certain processes which are judged incapable of meeting the specific emission limits at the present stage of technical development. However, it requires research to be conducted in order to establish methods of measuring and controlling smoke and particulate matter emissions from these latter operations. In the meantime, it insists that the equipment be operated in accordance with existing normal good operating practice.

The new ordinance gives the Department authority to control emissions from many other sources of air pollution. It prohibits open fires except for those made necessary by wrecking and demolition operations, however, it subjects those to specified controls on when and where the burning can take place. The ordinance provides for the eventual control of air pollution from sources such as internal combustion engines, storage piles, transfer of materials susceptible to be-



MASSEY-FERGUSON MULTI-PURPOSE TRACTOR SHOVEL

WHIPS "STICKY" EQUIPMENT BUDGETS

1 TRACTOR

10 *ATTACHMENTS*

Pick-Up Street Sweeper Attachment on Massey-Ferguson 1001

has complete hydraulic control with ¾-cubic-yard dust pan. Dumps directly into truck. Has 63" Palmyra fibre rotary broom and wire steel gutter brush and sprinkler system.

Blacktop Spreader Attachment

spreads up to 8-foot widths with two-cubic-yard hopper capacity. Has adjustable feed, width, and thickness control. Handles hot or cold mix. Independently powered . . . complete hydraulic control.

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coming windborne, and operation of parking lots and private roadways. However it permits flexibility in these regulations, subject to the development of specific procedures through research.

It prohibits the use of solid fuel containing high volatile matter in hand-fired equipment unless the operators can show that they can use it without excessive smoke production. It defines high-volatile fuel as solid fuel which contains more than 23% volatile matter on an ash-free and moisture-free basis. The Department is empowered to make tests to determine the allowability of specific fuels for use in hand-fired equipment. The Department also is authorized to make similar tests to approve incineration equipment offered for sale in the city. The ordinance prohibits the sale of domestic refuse burning equipment without such prior tests and approval.

The new ordinance maintains and extends the requirements for installation permits, operating permits, and annual inspections of fuel-burning, combustion, or process equipment. This permits examination of the plans for new equipment to ensure that it is so designed that the emission of air pollution can be kept within the legal limits. The ordinance provides for an annual inspection of all major equipment to verify proper maintenance and operation of approved equipment.

Chicago's new air pollution control ordinance provides the legal and administrative skeleton for a flexible program of air pollution control. The success of the program now depends on the ability of the community to provide specific answers through research and engineering development.

New Standards Set for Home Swimming Pools

Changes that will permit greater latitude than heretofore in the design of residential swimming pools have been incorporated into revised recommended standards recently approved by the National Swimming Pool Institute.

The standards now provide that up to a depth of five feet from the top, the wall slope may be up to two feet horizontal in five feet vertical. Previously, a wall slope of not more than one foot horizontal in five feet vertical was recommended.

A study of physical measurements of people of all ages by the NSPI standards committee demonstrated that there is no increase in danger if pool walls are less vertical than before, within the bounds of the new recommendations.

The new standards permit greater latitude in the concept of free form and other shaped pools as the trend away from the standard rectangular installation continues and landscaping becomes ever more important.

A pool wall is defined as the portion "that is *vertical* or inclined *more* than 45 degrees to the vertical from the horizontal," and the floor is defined as the portion "that is *horizontal* or inclined *less* than 45 degrees to the vertical from the horizontal."

The newly approved recommendations include a comprehensive section on diatomite-type filters. This section defines flow rates for pressure and vacuum filters and methods of determining square foot areas of filter septums or elements.

Copies of the recommended minimum standards may be obtained without cost by writing to Robert S. Green, Executive Secretary, National Swimming Pool Institute, Harvard, Ill.

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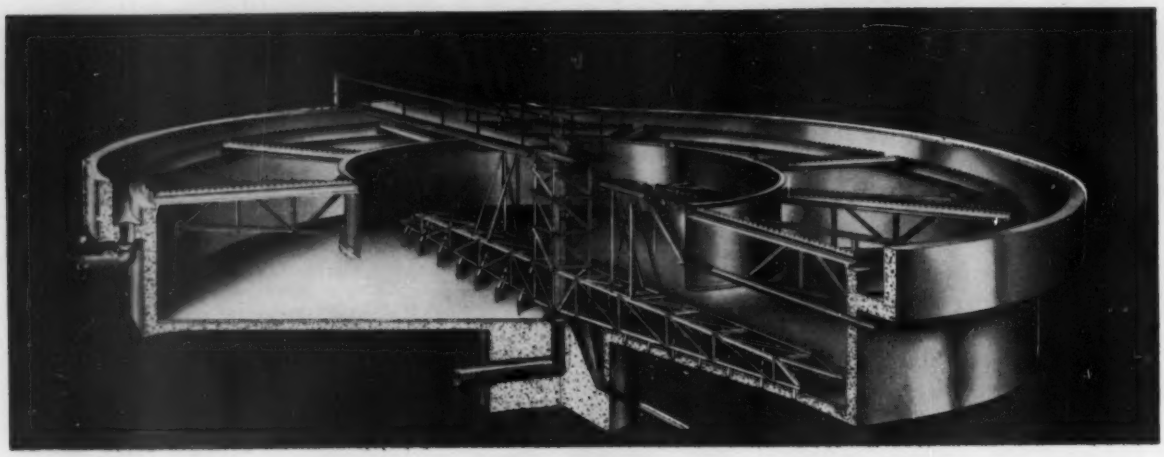

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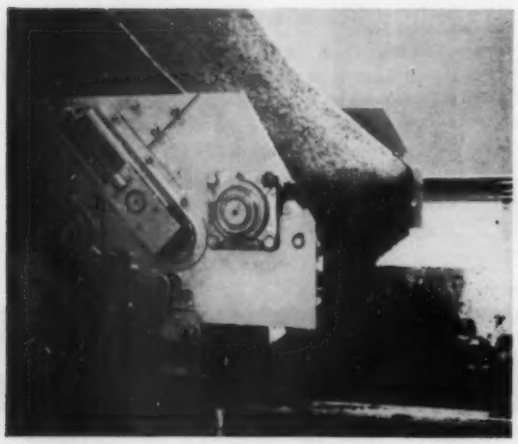

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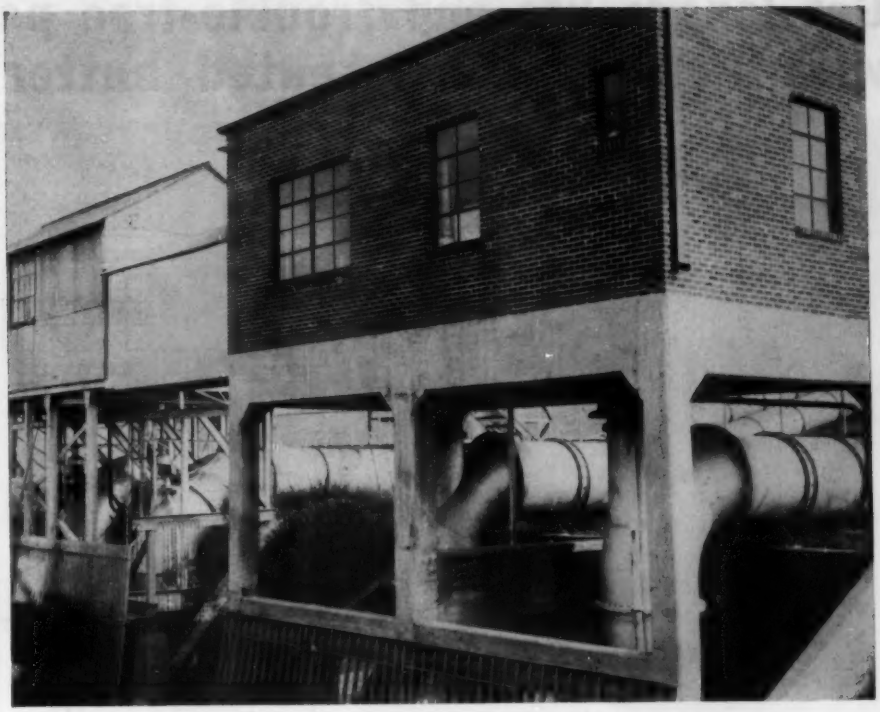


All four 50,000 gpm, Fairbanks-Morse vertical propeller pumps at West Monroe, La., take suction from individually-screened concrete basins fed by the district's natural storm drainage basin. The original plant, left, went into operation in 1935; the newer plant, right, in 1953.

No Floods Allowed

West Monroe, La. keeps dry and safe with district-financed flood control system

Periodically, municipalities in the Mississippi, Missouri and Ohio River basins have suffered recurrent inundation by flood waters. Prior to 1935 West Monroe, La., was one of them. However in that year the city put into operation a flood control pumping station equipped with two 50,000-gpm vertical propeller pumps. With the addition in 1953 of two more pumps of the same size and type, the town is now secure behind a flood control system with a combined pumping capacity of 200,000 gpm.

The town has found security, too, in the unfailing, trouble-free operation of its pumps and motors. Though the equipment is operated only at times of high river water or heavy rains and the two original pumps have averaged but 200 hours a year since 1935, they have been run day and night for as much as 33 days at a stretch, with never a failure. Further, no repair parts have been needed for either the 24- or the 6-year-old pumps and motors.

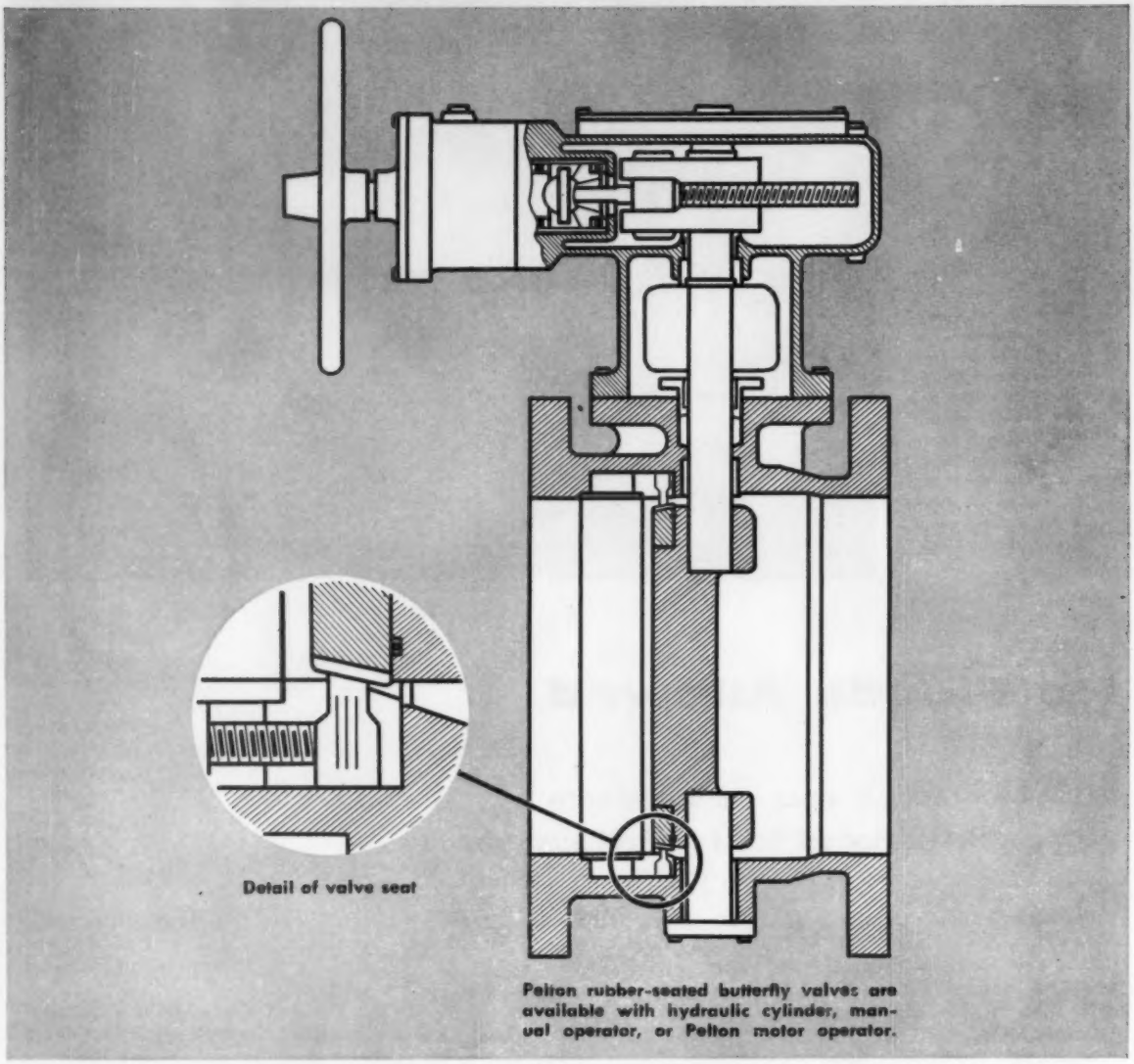
West Monroe is an industrial city of 28,800 inhabitants located on the Ouachita River in Northern Louisiana. Bracketed by hills to north and southwest, the 6,000 acres—roughly ten square miles—that comprise the city afford a natural basin for the backwash of a flooded Ouachita and the run-off from heavy rains. In 1927 the swollen river flooded the town for nearly six weeks. Boats were the sole means of transportation. While the majority of homes and stores escaped with a minimum of damage—past experience having taught builders to raise foundations 4 to 5 feet above ground level—business was at a standstill.

This flood, and an equally devastating one in 1932, aroused the local citizens to the need for preventive and protective measures and lead to a cooperative study of the water problem by the federal government and the Louisiana State Board of Engineers.

The first step taken was the construction of a vast system of levees and concrete walls along the perimeter of the district, extending from the hills on the north to those on the southwest, to hold back the waters of the Ouachita when they reach flood stage proportions. Storm water within the drainage district, inside the levees, drains by gravity first to a natural horseshoe basin and from there to the outfall system consisting of two 6-foot iron conduits passing under the levee. Flood gates were located at the discharge end of these conduits to be closed when the river reaches the 36-foot stage to prevent flood water backwashing into the town. This part of the flood control project was completed in 1933.

But it was two years before the

Get longer life and trouble-free performance with Pelton rubber-seated butterfly valves



Pelton rubber-seated butterfly valves are available with hydraulic cylinder, manual operator, or Pelton motor operator.

A 6-in. test valve under 50 psi with a flow corresponding to a 16 fps velocity in the adjacent 6-in. pipe was recently operated through 12,500 cycles (10,000 with rubber seat ring downstream of valve operating shaft, 2500 with it upstream). Periodic checks at frequent intervals revealed that the valve was absolutely droptight throughout the entire test. Similar tests conducted under 125 psi demonstrated equally outstanding performance of these butterfly valves.

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In addition to butterfly valves, Pelton manufactures impulse turbines, reaction type turbines, hydraulic turbine governors, spherical valves, pressure regulators, surge suppressors, waterworks valves, large centrifugal pumps, duplex strainers, dynamic balancers, etc. For descriptive illustrated bulletins, write Pelton Division (B-L-H), 2929 Nineteenth Street, San Francisco 10, Calif., or Eddystone Division (B-L-H), Philadelphia 42, Pa.

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pumping station was constructed. The depression intervened. The need for the station, though, was recognized from the first. With gravity drainage from within the district impossible at times of flood because of the closing of the gates on the outfall conduits, the town's natural storm water basin or reservoir, estimated at that time to have a capacity of 34 million gallons, was inadequate for a protracted flood period. Today, allowing for improved drainage, a 1-inch rainfall over the drainage area will bring in 10 million gallons of water.

Bonds to finance the station, originally authorized shortly after the residents of West Monroe organized the Ouachita Gravity Drainage District No. 1 in 1927, were finally sold in 1934. Plans and specifications were on hand, having been prepared by C. A. Peerman, consulting engineer, in 1932, and construction got under way late the same year.

The two 54-inch, 50,000-gpm Fairbanks-Morse vertical propeller pumps, each driven by a 300-hp, 450-rpm, F-M squirrel cage, hollow shaft motor, were ready to go into service on December 1, 1935—and not any too soon. Within 30 days they started a 33-day, 24-hour-a-day marathon. Water in the Ouachita rose over the 36-foot river stage and the flood gates in the gravity drainage conduits were closed. In the next 792 hours the pumps, with a combined capacity of 6 million gallons per hour against an 18-foot tdh (total dynamic head), boosted an estimated 4 billion 752 million gallons of water out of the district's natural drainage basin, over the levee through a pair of 54-inch pipes, 240 feet in length. The pumps take suction from individually screened basins.

Operating in time of high river water and heavy rain these two Fairbanks - Morse pumps and motors continued to keep West Monroe dry for nearly two decades. Then, in 1953 the town's drainage system was modernized. Trees and other obstructions were dredged from the dry bed areas, drainage ditches were widened and concreted. The result was a more rapid flow-off of water to the district's natural drainage basins.

Though storm water storage capacity was increased to over 50 million gallons it was felt that additional pumping capacity was needed to compensate for the more efficient drainage and a second pumping station was authorized. Herbert E. Dickard, consulting engineer, pre-

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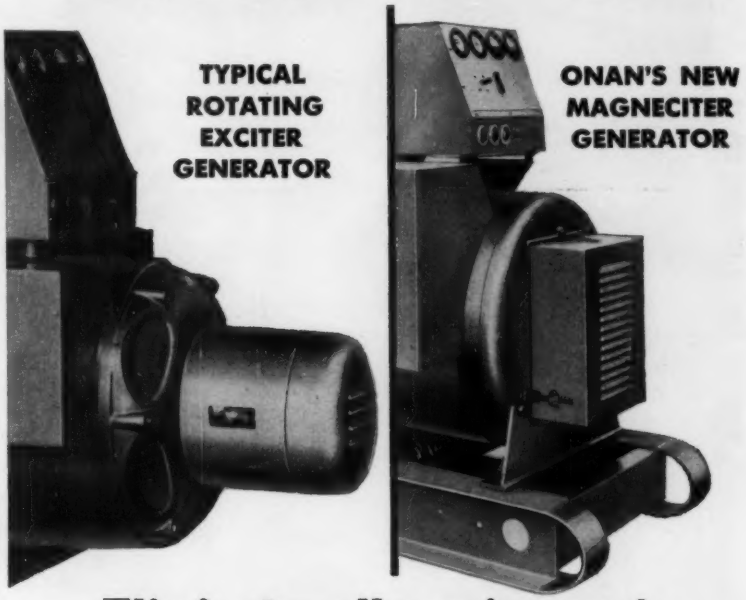

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pared plans and specifications. Placed close beside the original plant, this station is also equipped with two Fairbanks - Morse pumps of the same type and capacity. Both are 42-inch figure 6310, 50,-000-gpm vertical propeller pumps driven by 300-hp, 450-rpm, 3-phase, 2300-volt, Type QZV, F-M squirrel cage motors. Current comes into the two stations at 13,200 volts but is stepped down to 2,300 volts.

Since the equipment is used but intermittently, all four pumps are equipped with space heaters to protect the windings through all types of weather. All are manually controlled. Cutler-Hammer controls are used at the new station, General Electric at the old.

The most recent town-saving performance of the two stations, working as a team, was just about a year ago. Last spring the Ouachita River exceeded all previous flood levels. Its waters rose 3 inches above the level of the 1927 flood that kept West Monroe under water for six weeks. Pumping steadily for ten straight days the four pumps lifted 3 billion 168 million gallons of water over the levee. The city lay safe and dry behind them.

The district operates under a board of five commissioners. Of these, three are appointed by the Police Jury of Ouachita Parish and two by the state governor. This board is empowered to levy taxes sufficient to pay the cost of financing and operation. Mr. J. A. Norris is president of the board and Mr. L. L. Wood is secretary-treasurer.

Little Cities Industrialize In Iowa

Anyone who thinks that the little city is dying on the vine, ought to talk to the Iowa Development Commission.

The Commission reported that 69% of the new industries in that state last year located in cities and towns with less than 8,000 population.

Two communities where industry chose to locate, Dayton and Roland, have less than 1,000 people. Seven others: Laurens, Lake Mills, Manson, Manning, Britt, and Guttenberg, have between 1,000 and 2,000. Eight others, Hamburg, Corning, Grundy Center, Forest City, Audubon, New Hampton, Harlan, and Denison, have between 2,000 and 5,000 people. Five others: Carroll, Cherokee, Clarinda, Storm Lake, and West Des Moines, have between 5,000 and 8,000.

Land Use of Pittsburgh Area

The Sanborn Map Co., Pelham, N. Y., has been assigned the task of pin pointing how 470 square miles of land in Greater Pittsburgh are being used. It is part of a million dollar Transportation Study (P.A.T.S.). to be finished in 1960. The Study is financed by the Federal Bureau of Public Roads, the Pennsylvania Department of Highways, the City of Pittsburgh and Allegheny County. The movement of goods and persons is a direct function of the way in which land is used. Hence, the importance of the Sanborn land use survey.

P.A.T.S. is organized similarly to the Chicago Area Transportation Study (C.A.T.S.). Dr. J. Douglas Carroll, Jr., who directed the Chicago Area Study, is consultant for the Pittsburgh Area Study. These two metropolitan studies represent an advance on the older-type Origin and Destination (O. & D.) Surveys, which did not include land use data.

The data will be transferred to punch cards.

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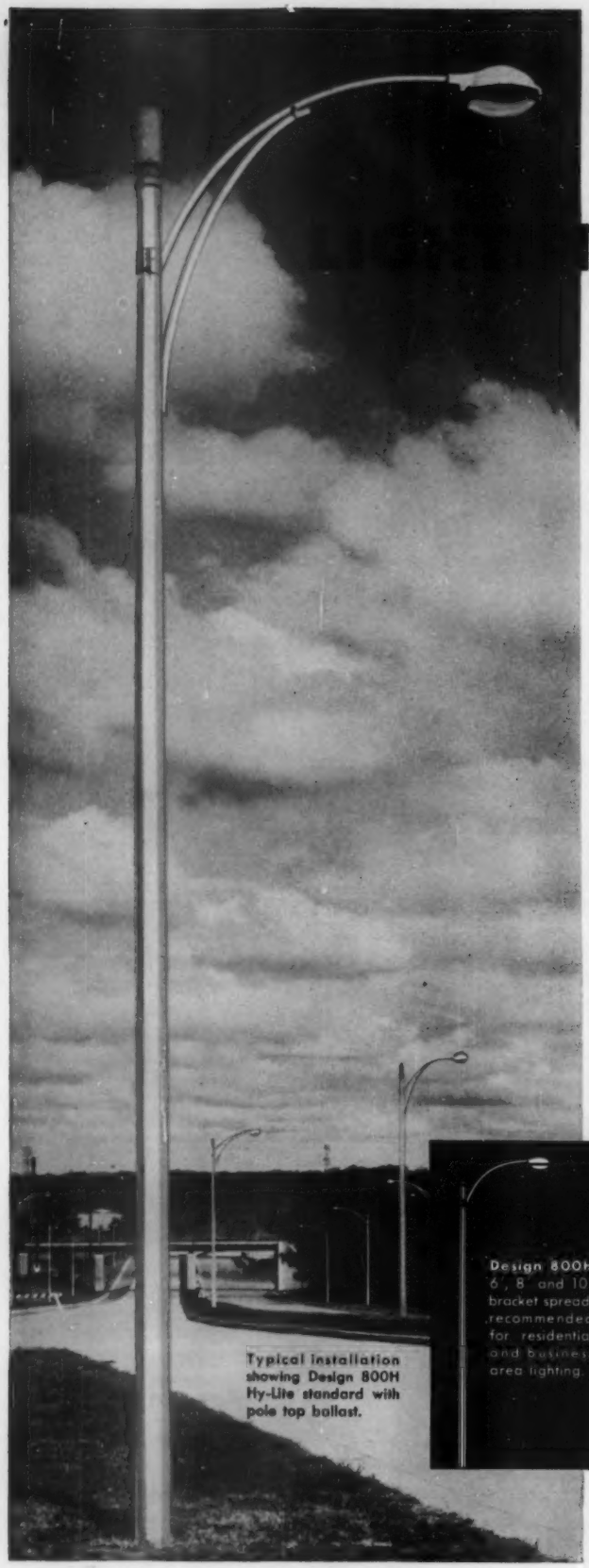

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The City Tells Its Story

Edited by PAN DODD EIMON
Consultant, Municipal Public Relations

City Newsletter Wins Public Vote of Approval; Officials Find It Timely, Economical, Effective

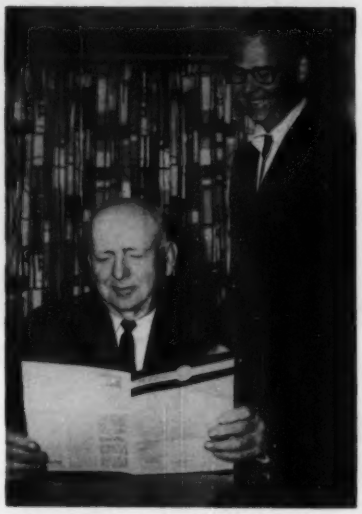
Believing that the "city council has a duty to devote a suitable portion of public funds to keeping the public well informed," the council and city manager in ANAHEIM, CALIF., have found a satisfactory way to carry out this responsibility. They publish the *City of Anaheim Newsletter* six times a year.

Mayor A. J. Schutte describes the newsletter as a "timely and not-too-costly way to get information to citizens." Department heads and city employees have felt the impact of the newsletter from the time the first issue went out. A recent poll of citizens indicates public acceptance, too. People were asked, "Do you receive the newsletter?" "Do you read it?" "Do you approve of it?" Eighty per cent of the people polled said "yes" to all three questions.

Several years ago, the Anaheim council began exploring ways of telling the city's story to its people. City Manager Keith A. Murdoch came up with the newsletter idea. He felt that information several times a year in a newsletter form would be "more effective than an annual report." While the newsletter would cost a little more, Murdoch felt it was worth the difference to reach citizens more frequently.

But the city manager recommended against an "overly humble mimeographed paper." Such a paper, he felt, "smacks of thin finances, lacks prestige, and is destined for the wastebasket before it's read." So Anaheim's newsletter is crisply professional. The city contracted with public relations consultant, Guy Halferty, to write and produce it. His orders: "Keep it interesting, accurate, informal, friendly, and businesslike."

The idea has paid off. People read the newsletter and they respond to its requests for action. A few months ago, the newsletter carried a small boxed item about the public works department's need to dispose of broken concrete. The concrete was the by-product of a sidewalk construction job and dumping it threatened to be a costly matter for the city. The item told the citizens that the broken concrete could be used for walks and patios and that the public works department would deliver it to them free.



"There's the story which brought results," Manager Keith A. Murdoch, standing, points out to Mayor A. J. Scutte as they look over a recent edition of the Anaheim Newsletter.

Public Works Director Win Priday still hasn't gotten over the reaction to that story. "Our phone started ringing the day the newsletter was delivered" he said, "and it kept ringing for weeks. We logged over 500 calls on a one-paragraph item and we cured our surplus concrete troubles."

Other newsletter items have had similar impact. A notice that the Bureau of Census would hire part-time workers turned up more than enough people for the jobs. Residents responded promptly to one city request to clean junk out of alleys, to another not to flood gutters during mosquito season. When people were asked to punch holes in metal garbage containers so that they would not collect water during rainy season, holes were punched!

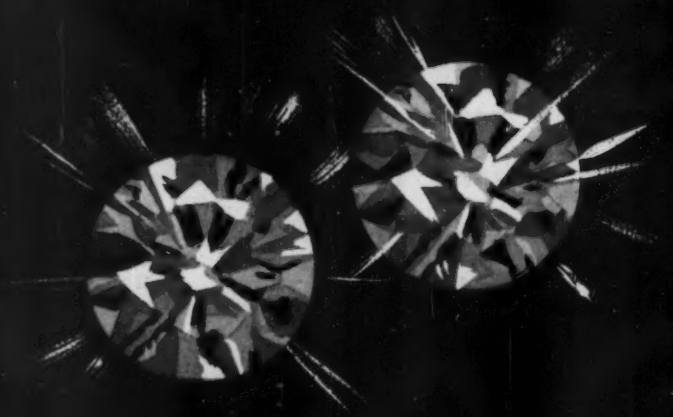
The newsletter is "kept puritanically non-political. It is never used as a propaganda sheet," Murdoch says. Nor is the city competing with the daily newspaper. The council simply recognizes that "no newspaper reaches every home; no newspaper has the staff or the space to cover city government in detail and depth. No newspaper is read solely because of its city information and, therefore, much city news either is considered superficially, is carried on back pages, or isn't covered at all."

The city newsletter has featured a comprehensive tax table on page one. The table detailed each item on the tax bill. Accompanying information showed that the city property tax represented just 15% of the total tax bill.

To stimulate citizen participation in city government the newsletter is running a series of stories dealing with the creation of, and the progress of, citizens' committees working on a ten-year, $20-million capital improvement program. There is a feature column, "Know Your City," which covers a different city office each month. Another series, "What's It For?" explains the whys and wherefores of certain Anaheim ordinances.

The newsletter also carries periodic digests of the recreation program; information on forthcoming street improvements, traffic controls and signals and property acquisi-

They LOOK alike...



BUT...

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tion; dates for hearings—on such matters as zoning—in which citizens have a stake. Feature-story treatment is given the services of the public works department and utilities. Officials think the popular style of writing about city business has contributed to the public approval registered in the recent opinion poll.

A year's supply of newsletters comes in six different colors. The format is the same for each issue but the color on the masthead changes with each issue. It is 6"x9" in size and consists of four pages, printed in black on white enamel paper.

Addressing plates of the city utilities are used for mailing. Some 25,000 copies are sent to every home, business house and industrial firm. There is address space on the newsletter, and envelopes are not used.

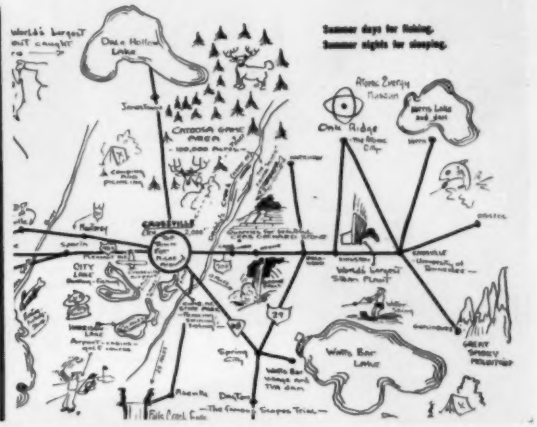
The cost of the newsletter—including mailing and the fee of the public relations consultant-editor—is $6,000 a year. Printing is done locally and the printing contract is awarded on the basis of competitive bidding.

Mayor Schutte says that the council "is satisfied with the newsletter as a most efficient and direct means of communication." Manager Murdoch believes it "comes out often enough to have continuity but not too often for economy."

The city manager, by the way, is keeping a file of congratulatory cards and letters which come in. They are gratifying and some are even surprising. "Imagine" says Manager Murdoch, "a number of people save the newsletters. Several are making bound volumes!"

Sample copies of the *Anaheim Newsletter* may be obtained from City Manager Keith A. Murdoch, City Hall, Anaheim, Calif.

Phoenix Councilman John B. Haldiman, right, watches civic leaders attach a car sticker proclaiming Phoenix, Ariz. as an "All-American City." Businessmen and a citizens' committee teamed up to print and distribute 30,000 of the stickers.



Out-of-city dwellers are suffering from an economic squeeze—vividly portrayed on the cover of an Albuquerque, N. M. annexation folder, left. A tourist-luring map, right, dramatizes the location of Crossville, Tenn. amid recreational facilities. The map is distributed to motorists going through the city.

MPR Gimmick: Window Stickers

PHOENIX, ARIZ. has twice been named an All-America City, and citizens and businessmen have teamed up to tell the world about it. They have created and are distributing 30,000 red, white and blue automobile stickers identifying Phoenix as an All-America award-winner.

Automobile decals were the idea of the Phoenix Citizens' All-America Award Committee. The cost of the stickers was underwritten by the Arizona Public Service Co. and and Mountain States Telephone & Telegraph Co. The reminders are being distributed by more than 150 gasoline stations in the Valley of the Sun.

The goal of the sticker project is to interest strangers in Phoenix; to build citizen pride in and responsibility for Phoenix.

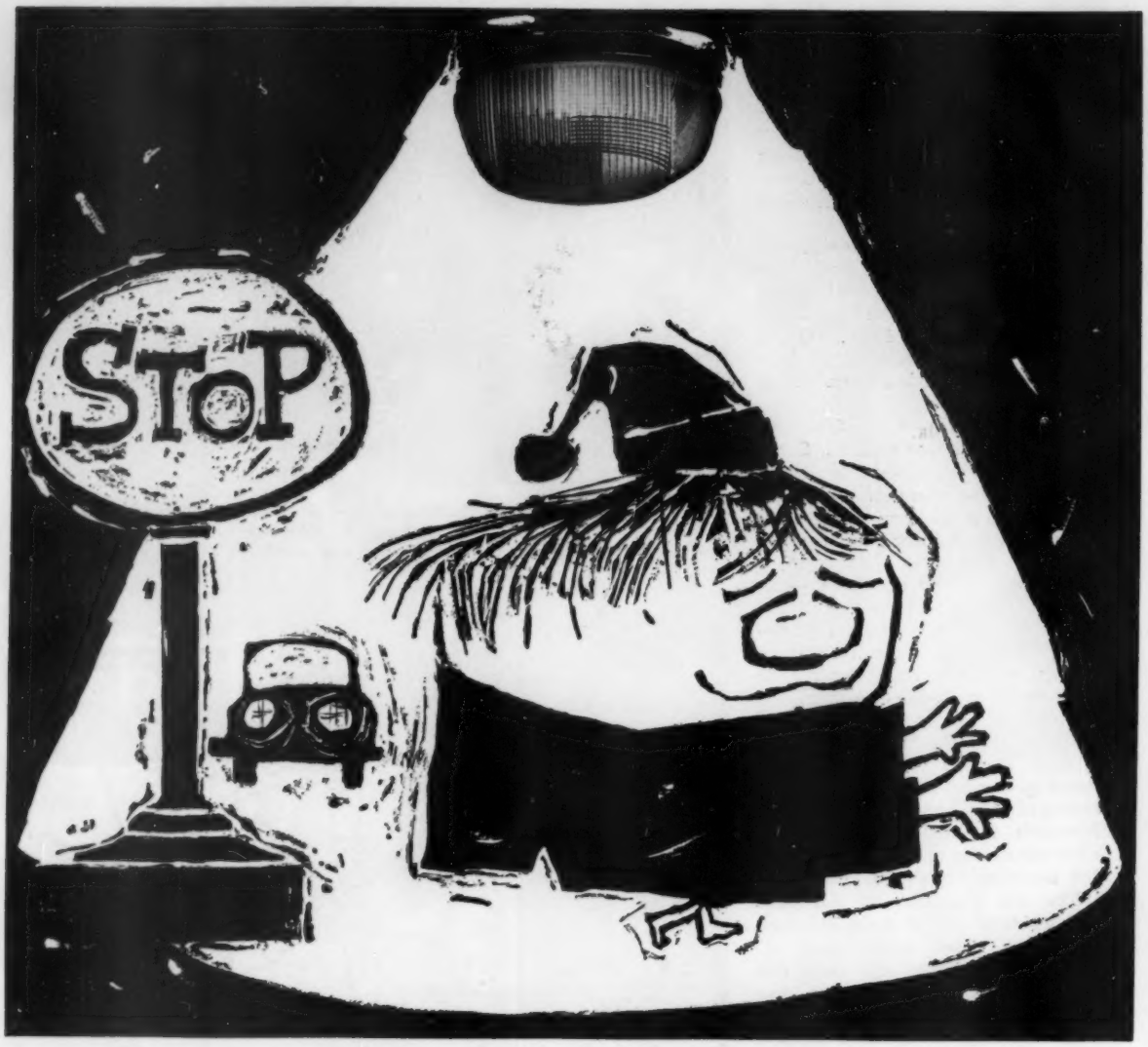
MPR Promotion: Annexation

ALBUQUERQUE, N. M. takes a new tack in promoting annexation in surrounding areas. "The economic squeeze is less," a printed folder proclaims, "when you are living in the city." The promotion goes on to say that, "while city taxes are higher, other costs drop." Among them: lower fire insurance rates; no septic tank troubles, fewer chuck holes and wash boards save your car, less water trouble and expense, and no refuse question.

The folder is black on white with some eye-catching drawings. It is a low-pressure information folder rather than a hard-sell item. Nevertheless, it lacks clarity and folds poorly. But the theme is interesting and sound. Copies are available from the Planning Department, Albuquerque, N. M., P. O. Box 1293.

MPR Goal: Tourist Promotion

CROSSVILLE, TENN., has devised an inexpensive, effective way to flag down passersby and urge them to stay in the Crossville area. The



ZZZZZ

You know this little man. His isn't just a personal problem. He's a problem to you, too.

He goes around at night as if he were sleepwalking. He pops out without caution from behind a car. He crosses, without looking, at the darkest corner.

You jam on the brakes. Then, a block later, you sweat a little, thinking of what *could* have happened.

Why didn't you see him? Blame it on the street lights!

Proper street lighting means more than hanging up enough light bulbs. If your streets and highways have aimless patterns of light and shadow, your lamps aren't doing their job.

Corning makes glass refractors that *control* light distribution from street lamps. These refractors eliminate wasted light. They direct light where it's needed to help a whole city drive and walk with greater safety.

You can get Corning refractors in tough PYREX brand glass for reliable service—to resist damage from heavy storms, extreme cold, or little boys with big stones.

Talk to a manufacturer of street lighting equipment to see what an up-to-date lighting system can do—for both the safety and prosperity in your town. And insist on Corning refractors for the luminaires.

For further information, just write Corning Glass Works, 63 Crystal Street, Corning, New York.

CORNING GLASS WORKS

CORNING MEANS RESEARCH IN GLASS

local Chamber of Commerce has printed a map with come-hither qualities. It is simple and easy-to-read. The map is distributed by cafes, gasoline stations, stores, motels and hotels.

In print and line drawing, the map proclaims Crossville's location on the "largest timbered plateau in America" at the center of a recreational-sporting paradise. It shows seven lakes, two large waterfalls, three state parks, the Great Smoky Mountains National Park, the atomic City of Oak Ridge, two major TVA dams, and the Catoosa Game Area in the Crossville neighborhood. The map is multilithed on 10"x13" yellow paper with black ink and line drawings. The drawing was done by a local man.

"Only 24 Tourists a Day

. . . leave more money in one year than a business with $100,000 payroll." That's how Richard H. Howland, president of the National Trust for Historic Preservation, Washington, D. C. has it figured. Howland says that the reconstruction of historic landmarks provide such tourist lure that these "have meant a new surge of economic growth to many rundown areas." Public relations activities to attract tourists to your city were the subject of "The City Tells Its Story," April, 1959. Go back and read it if you missed it.

Engineers Who Serve Cities Receive High Honor

Three engineers whose principal works have been services to various local governments were among five men who received Honorary Membership in the American Society of Civil Engineers recently. This is one of the highest honors that the Society grants. The three men are:

- **Julian Hinds, at one time chief engineer and general manager of the Los Angeles Metropolitan Water District and one of the designers of the Colorado Aqueduct, considered one of the "seven civil engineering wonders of the United States."**
- **Gustav J. Requardt, of Whitman, Requardt and Associates, Baltimore consulting engineers, known widely for leadership in water supply, sewage purification, refuse disposal and other fields of local government engineering activity.**
- **Herbert Ashford Robertson Austin, formerly chief engineer and general manager of the Honolulu Department of Public Works.**

4000-pound car hit fence at 35 miles per hour...

USS Cyclone Steel Fence "gives" ...does not break or fall!

This section of USS Cyclone Fence was set up specially for this test and erected in the usual manner. When the fence was struck by the speeding car, the fabric gave, stretched slightly, but did not break! The car was stopped!

Doesn't this prove that USS Cyclone Fence can give you good, safe service? At municipal warehouses, parking lots, recreation areas or any place where traffic or delivery of supplies is heavy, USS Cyclone Steel Fence is a wise investment. As this test proves, Cyclone Fence is built to take punishment, to stand up under rough, tough service.

For more information on USS Cyclone Fence, just send in the convenient coupon.

USS and Cyclone are registered trademarks

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United States Steel Export Company, Distributors Abroad

Cyclone Fence, American Steel & Wire
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Cleveland 13, Ohio

Send free booklet featuring Cyclone Fence.

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Address_____

City_____ Zone_____

State_____

Why Transistors Are Better Than Tubes

By **ERIC J. GOLEAS**, Regional Sales Manager
Motorola Communications and Electronics, Inc., Chicago

The three major reasons for purchasing radio communications equipment utilizing transistors are: 1) reliability; 2) reduction in power consumption; 3) compactness. These benefits, plus several others, far outweigh the added initial expense of up-to-date transistorized equipment.

The transistor is a tiny slab of germanium or silicon crystal which has been modified by various techniques to make a device capable of amplifying electrical current and so take the place of a tube when properly used. The transistor is essentially a tiny, low mass, vibration-proof, shock-proof, heaterless piece of solid material. Comparing this to the larger, more complex structure of plates, grids, cathode and heater filament in a vacuum tube, one can easily see which device is mechanically more reliable.

The advantage of the transistor over the vacuum tube in terms of increased reliability, however, goes far beyond this and provides added reliability from both a maintenance and a design viewpoint. The failure of equipment using vacuum tubes is not only the failure caused by tube defects or tube malfunctioning, but it is also the failure of other components which have been subjected to the excessive heat, the high currents and the high voltages which characterize vacuum tube equipment. In comparison, in transistor circuitry, the maximum voltage might be 12 volts with little heat generation.

To see how the second and third benefits of transistorization affect radio equipment, one must examine individually the radiophone used by various City of Chicago agencies. The Police Department has in use 400 Motorola "Dispatcher" radiophones on solo-cycles and three-wheel (servi-car) motorcycles. By employing transistors, this equipment occupies less than one-half the space, where space is a premium; uses 85% less battery power; and has a 50% more powerful receiver output than tube-type motorcycle radiophones. Transistors replace all tubes in the audio and intermediate frequency stages of the "Dispatcher" radio. The power supply also uses transistors rather than mechanical vibrators. The new transistorized units measure only 12" by 12" by 3". This *compactness* permits rugged, low mass housing that establishes high shock and vibration resistance in itself and makes possible a simple shockproof mounting bracket.

In the portable two-way communication field, transistors have made possible tremendous advances. Various Chicago departments use Motorola Handie-Talkie radiophones. Before the use of transistors, these units were rated at as little as one-quarter of a watt of radio frequency power. With the use of transistors in place of tubes enough additional room was created in the package to enable units of the same size to put out more than four times the amount of RF power and yet use less battery power. With larger packs, transistorization has enabled building portable units providing as much as 8 watts RF output power. The highest power pack sets previously possible were about one watt.

These same benefits of transistorization apply in a limited manner to the mobile two-way radios used in several hundred city vehicles. These units utilize transistors in the power supply rather than vibrators or dynamotors. Since vibrators have a limited life span, the use of the rugged long lived transistors in their place results in a much more reliable unit. Size, weight and current drain are not appreciably affected by this initial transistorization in the mobile units. However, the recent development of the Motrac two-way radio, which has a completely transistorized receiver and a partially transistorized transmitter, will show marked improvements in mobile radio reliability and an 85% reduction in power consumption. Size and weight are likewise reduced as much as 50%.

This is an excerpt from material supplied by the author in answer to a question asked by John Ward, City Purchasing Agent of Chicago—"Why buy transistorized radio equipment?" It was published by Albert Hall in the Letter Service of NIGP.

To Learn Purchasing

A. L. McMillan

Plans for study courses in purchase and supply are outlined in "How to Teach Purchasing," a book by A. L. McMillan, former Director of Purchase for New York City. The courses are based on the use of the author's "The Art of Purchasing."

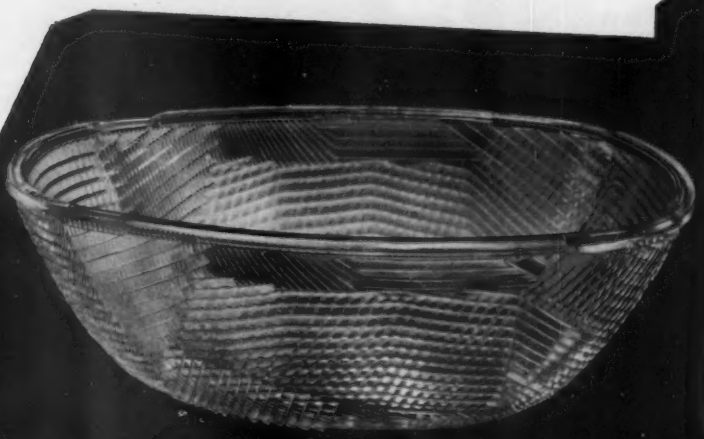
"The purchasing department is basically concerned with 'quality, quantity and price' and their interrelations," writes Mr. McMillan in the opening chapter of "How to Teach Purchasing." "We can begin our study upon this triangular basis, and from it we will promptly extend into other fields of relations with using departments, with vendors, with financial officers and with many others. Thus, we can develop an orderly line of analysis for the study of purchase and supply."

In his purchasing technique course, he outlines ten classroom sessions covering everything from the selection of items to be bought to the disposal of surplus and salvage. The book concludes with tips for purchasing agents who must make special talks or give lectures.

"How to Teach Purchasing" is a Baedeker for those who wish to set up regular credit courses such as would be given in business schools, technique training courses for use within organizations, or discussion courses for purchasing officials.

(Continued on page 159)

2 NEW HOLOPHANE REFRACTORS



1 REFRACTOR NO. 4062
I.E.S. TYPE II

2 REFRACTOR NO. 4063
I.E.S. TYPE III

- **For Daytime Safety in Nighttime Traffic**
- **High-Level Efficiency**
- **Low-Cost Maintenance**

PEMCO LUMINAIRE

Designed Specifically for New PEMCO* 400 Watt Mercury Horizontal Luminaires...

Combining long experience in street illumination, with time-proved principles of prismatic light control, HOLOPHANE engineers have developed two new Refractors for PEMCO Luminaires. Their "custom-tailored" prismatic designs supplemented by other optical components give these fine luminaires the following advantages: • more light on the roadway • uniform distribution • great visibility distance • maximum illumination per taxpayer's dollar...Before you act on any street lighting plans—write for HOLOPHANE engineering recommendations; no obligation.

*Philadelphia Elec. & Mfg. Co.

Special "ENDURAL"® Glass Advances the Quality of HOLOPHANE Refractors...

One of the major factors in the excellent performance of Holophane Refractors is their unique crystal clear, Borosilicate Glass, known as "ENDURAL." This glass has been specially designed to meet the energy distribution characteristics of large Mercury lamps.

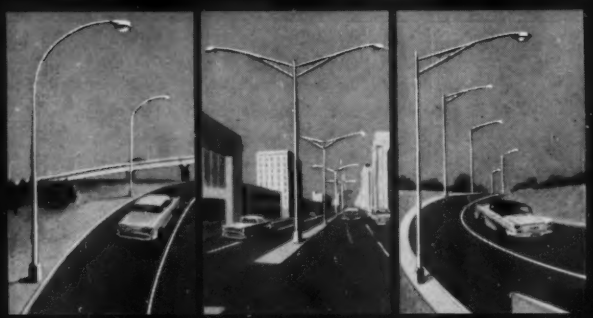
Holophane

HOLOPHANE COMPANY, Inc. Lighting Authorities Since 1898
STREET LIGHTING DEPT., NEWARK, OHIO
THE HOLOPHANE CO., LTD., 418 KIPLING AVE. SO., TORONTO 18, ONT.

GLIMPSE OF TOMORROW IN A GROWING AMERICA

Dynamic Philadelphia . . .

builds for tomorrow today. Beautiful new buildings, expressways designed for future traffic, restful parks and modern parking facilities . . . all part of a building renaissance sweeping Philadelphia . . . and all America.



Contributing to a vast national redevelopment program . . .

The New Standard in Aluminum Lighting Standards . . . by READCO

READ STANDARD, YORK, PA. • A DIVISION OF CAPITOL PRODUCTS CORPORATION

(Continued from page 156)

"The Art of Purchasing" is a textbook, liberally illustrated, that presents the problems of the buyer and the purchasing agent and offers solutions.

It explains what a purchasing agent is expected to do and guides him in the area of joint responsibility and interest between himself and the agency which uses the goods he buys.

Practical Rules

In these pages, you will find all the principles and practical rules you need to know for action regarding purchase quantities, qualities, prices, legalities, standards, inventory control, free and open markets and salvage disposals, plus purchase policy and administration.

Having been Director of Purchase for New York City and adviser to the Commonwealth of Puerto Rico, the author is recognized as an authority on purchasing on the government level, a subject to which he devotes several pages.

The publisher is Exposition Press Inc., 386 Fourth Ave., New York 16, N. Y. "How to Teach Purchasing" (40 pages) is priced at $2.50; "The Art of Purchasing" (386 pages) is $7.

Toledo Zoo Adds Helicopter

Unless the management plans to add jet-powered aircraft to its line of rides, the gamut of make-believe transportation has been pretty well run at the Toledo Zoo. Toledo youngsters now can enjoy a helicopter ride when visiting their city's zoo. The 24-passenger amusement ride features eight helicopter cabs which are individually controlled by the adult or child passengers.

Merry-Go-Round

In 1956 the Toledo Zoo replaced its live pony ride attraction with a 36-foot merry-go-round. This attraction grossed almost $12,000 per summer for the zoo, which is more than three times the revenue produced by the ponies. Mr. J. F. Bissonnette, business manager of the zoo, expects the new helicopter to equal or exceed the revenue that is produced by their merry-go-round.

In addition, the Toledo Zoo has operated a miniature train for many years with outstanding success. Tickets for all three rides are 15c each. All proceeds are used for the purchase of new animals and operation of the zoo.

All the rides are products of the Allan Herschell Company, North Tonawanda, N. Y.

Look!

NO FAUCETS TO OPERATE

USE YOUR FOOT TO WASH YOUR HANDS

Press down on the treadle of a Bradley Duo Washfountain and wash your hands in the clean tempered water supplied by the sprayhead—remove the foot and water is cut off.

There are no faucets to touch or manipulate, no chance of any infectious contacts . . . and the bowl is always clean, never any unsightly residue, since it is self-flushing.

You have a choice of stainless steel or vitreous enamel (white and 5 colors) and three heights are available: Standard 31", Intermediate 29", and Junior 27".

Bradley Duos are widely used in institutions, offices, public buildings, schools, restaurants, food markets—providing the maximum in sanitary and economical washing facilities. Where can *you* use them? Write for Bulletin K1204, BRADLEY WASHFOUNTAIN CO., 2333 W. Michigan St., Milwaukee 1, Wisconsin.

BRADLEY Duo Washfountains

Distributed Through Plumbing Wholesalers

New Industry Gets Water Fast Through 20-Inch Concrete Line

This 20-inch line serving the new Western Electric plant on East Broad Street in Columbus, Ohio was installed in 21 days.

Robert C. Parkinson, of the Columbus Division of Water says, "It rained nearly every day, but even so, we laid the 4700 foot line in only 21 days."

The line was installed to serve a rapidly growing area in which the plant is located, and is expected to be tapped many times as development grows. One ¾-inch service tap was made soon after the installation was completed.

Engineers were Uhlmann and Associates of Columbus. Contractor was Fishel Company, also of Columbus. Price Brothers Company manufactured the prestressed concrete steel cylinder pipe at its Dayton plant. Price Brothers serves the South from its plant at Hattiesburg, Miss.

Price Brothers

Flocculation takes place in the foreground portion of these tanks. The effluent collectors can be seen at the far end of the sedimentation section.

Odessa's Municipal Oasis,

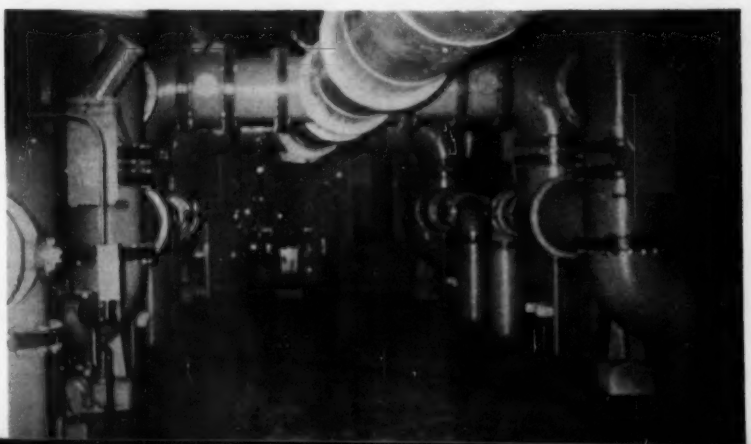
. . . takes the form of a new water treatment plant easily expanded, with special conservation features

By JAY W. SHARP*

As water holes are invaluable to the desert traveler, our water treatment plant is invaluable to Odessa citizens. In this desert-like country, water sources are far apart. Lake Thomas, located 90 miles from the plant, serves as our main source of water. We have two other sources, the Martin County Wells some 30 miles distant and the Odessa City Wells only a few miles away. Of these three sources, only the lake water requires treatment, but this constitutes more than two-thirds of the city's water. Thus, the plant gives life in the form of water to the city.

The plant, designed by Parkhill, Smith and Cooper, Consulting Engineers of Lubbock, Texas, combines function and foresight with beauty. Automatic instrumentation is such that only two men are needed on each operating shift. It may be increased in size from the present 15 mgd capacity to 45 mgd without constructing additional buildings. Beauty results from such things as the glassed-in front, indoor columns, and an indoor flower bed. The plant is modern but not radical. It is beautiful yet has the business-like appearance that a municipal development should have. Treat-

* Mr. Sharp was formerly Assistant to the City Manager of Odessa, Texas. Since writing this article he has joined the technical publications department of R. G. LeTourneau, Inc., Longview, Texas.



An operator's dream—a pipe gallery with room enough to work and make whatever additions or adjustments that may be required.

"Controlled Digestion" Additions at Oakland

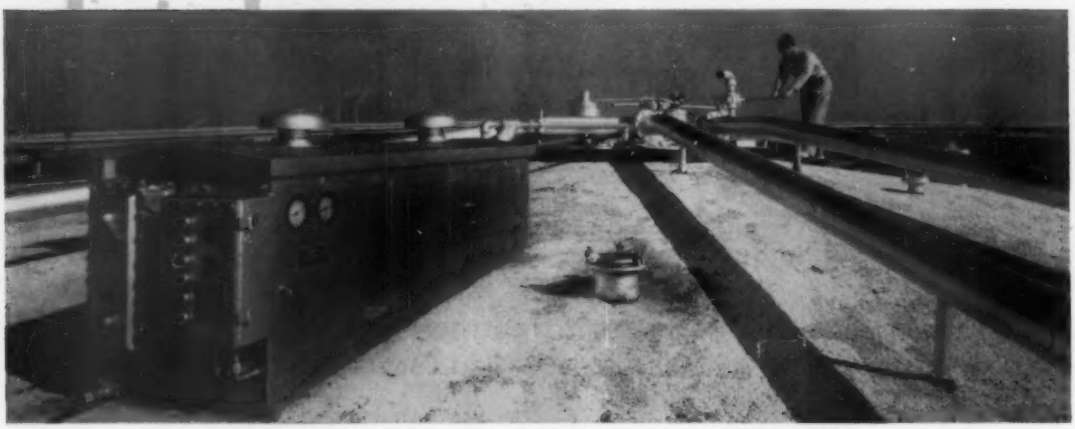
California's East Bay Municipal Utility District has made commendable steps in their clean-up program to curb pollution of the San Francisco Bay.

Their sewage treatment plant was completed in 1951 and included the following P.F.T. equipment: three 95′ Floating Covers, three #1500 Heaters and Heat Exchangers, three Floating Cover Position Indicators, Gas Safety Equipment.

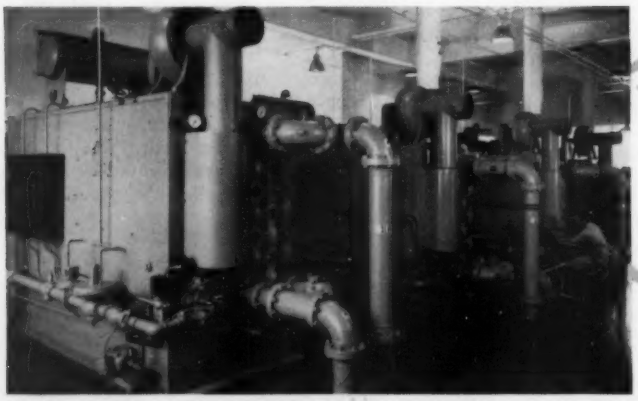
Continuing their program, in 1958 P.F.T. equipment was *again* selected which included: one 95′ Floating Cover, another #1500 Heater and Heat Exchanger and a Floating Cover Position Indicator.

1958's additions embodied all the latest digestion controls including P.F.T. Pearth Gas Recirculation for increased effectiveness of the new unit.

Plant designed by—Engineering Department—East Bay Municipal Utility District.



Above—P.F.T.'s Pearth Gas Recirculation equipment on newly added 95′ P.F.T. Floating Cover Digester.



Above—Additional P.F.T. Heater and Heat Exchanger installed in 1958. Notice the perfect blending with those installed in 1951.

P.F.T.

waste treatment equipment exclusively since 1893

PACIFIC FLUSH TANK CO., 4241 Ravenswood Avenue, Chicago 13, Illinois

PORT CHESTER, N. Y. • SAN MATEO CALIF. • CHARLOTTE, N. C. • JACKSONVILLE • DENVER

Director of Utilities G. T. Morris (right) and Water Superintendent A. L. Wright check plans for a proposed 33-inch line from the Martin County Wells to the treatment plant —another step toward more water for Odessa.

This all-glass entrance typifies the modern features of Odessa's water treatment plant both in structure and equipment.

ment Superintendent Mike Breneman's pride in the plant is demonstrated by his eagerness to show visitors around.

Physical Features

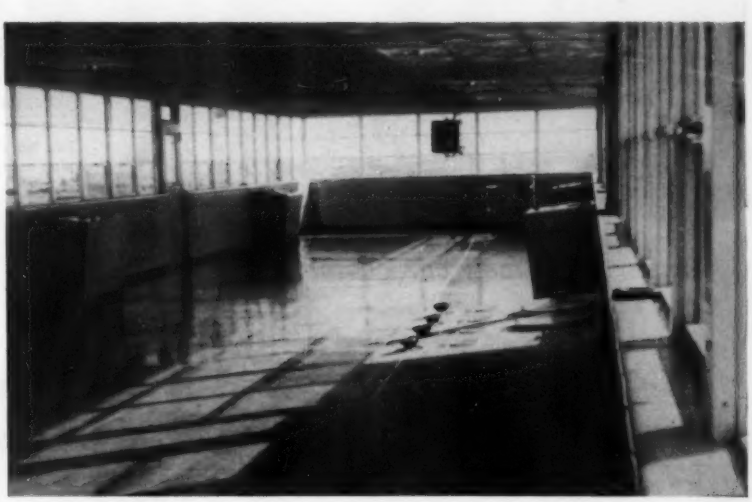
The principal physical features of the plant include chemical feeders, a rapid mixer, two basins for flocculation and sedimentation, a sludge lagoon, six 2½-mgd rapid sand filters, a 5-million gallon clearwell and the control building.

A room in the control building houses two 750-pound-per-day Wallace & Tiernan chlorinators. The chlorine solution manifold is arranged so that either chlorinator will feed the raw water influent line, filter influent line or the filter effluent line. Uscolite pipes and fittings are used throughout. The chlorine rack, located outside the building, holds seven one-ton liquid chlorine containers.

Alum and lime are stored in three 3,000-pound-capacity hoppers, one for alum, one for lime, and one for alum or lime. These in turn supply the chemical to the Omega Gravimetric, loss-in-weight type feeders, each rated at 500 pounds per hour. The chemicals drop into five-minute retention dissolvers and then flow into the rapid mixer.

An Omega Rotolock carbon feeder is located in a separate building. It is equipped with intermittent electric-impulse controls and has a feed range of 10 pounds per hour minimum, 50 pounds per hour normal, and 100 pounds per hour maximum. Carbon passes from the feeder into the wash-down tank, and the mixture is ejected through Uscolite piping into the rapid mixer or to the filter influent line. We use activated carbon only about two months of the year—when the lake turns over. This phenomenon makes the water taste and smell bad.

The rapid mixing basin has a design flow of 15 mgd with a turnover rate of approximately 22,500 gpm. After mixing the water flows to the two flocculation and sedimentation basins. These continuous flow basins are each 14 feet deep, 251 feet long and 96 feet wide. Each has a surface area of over 24,000 square feet and a capacity of 2.5 million gallons. They are divided into two parts: the flocculators and the sedimentation tanks with baffle-board walls separating the two. The flocculators consist of paddle wheels with 2 - inch - by - 6 - inch redwood flights, and each basin contains three rows with seven flocculators



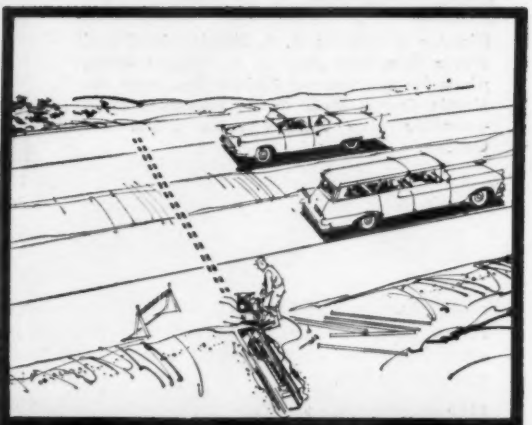
At present, three filters are located on each side of this filter gallery. When additional filters are needed, the gallery will be extended beyond the far wall.

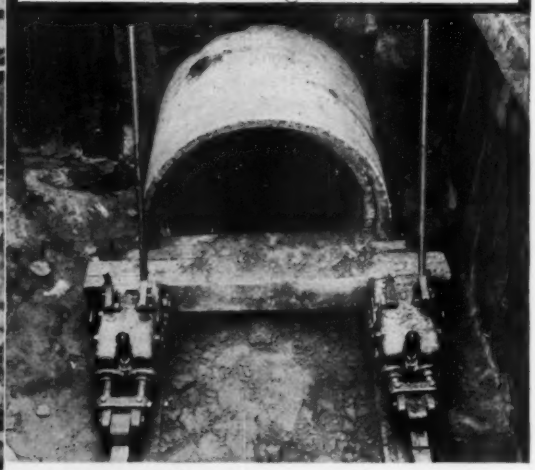
wherever pipe must go underground

Cut job time and costs to a fraction

with a Greenlee Pipe Pusher

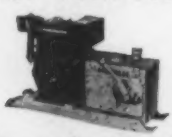
Here's the fast, easy way to install pipe and ducts under streets, walks, tracks, lawns, floors. Model No. 790 GREENLEE Hydraulic Pipe Pusher (left) with power pump pushes ¾" - 4" pipe about two feet per minute. A small ditch accommodates the pusher — streets and other property remain undisturbed. Costly tearing up, tunneling, filling, repaving are eliminated. The GREENLEE Pusher is a compact unit, simple to transport, set up, and operate. Hand or power-pump operated. Two models: No. 790 for ¾" - 4" pipe; No. 795 for pipe over 4", concrete sewer and corrugated ducts. See your supplier or write for descriptive literature.





Two No. 795 Pushers in twin setup pushing large concrete sewer pipe under tracks.

OTHER GREENLEE TIME SAVING TOOLS TO SPEED YOUR JOBS, CUT COSTS



High-pressure Power Pump for operating GREENLEE Hydraulic Pipe Pushers, Pipe Benders, and other hydraulic rams and jacks.

Hydraulic Pipe and Conduit Benders for ½" - 4" sizes. Lightweight, portable, one-man-operated. Full 90° bend with one ram stroke!

TOOLS FOR CRAFTSMEN

GREENLEE

GREENLEE TOOL CO.

1780 Columbia Ave., Rockford, Illinois

per row. Their peripheral speed may be varied from 0.5 to 2.0 feet per second.

The sedimentation tanks provide about four hours of detention time at design capacity. The floor of each tank slopes toward a sump, 142 feet long and 3 feet wide, located in the center. These sumps receive sludge when the tanks are drained. Tank effluent passes over three weirs at the end opposite the flocculators.

Sludge from the flocculation and sedimentation tanks is pumped to a 250-foot-square lagoon with earth dikes.

Outdoor Filters

The six filters are located outdoors, three on each side of an extension from the main building that houses the filter gallery and pipe gallery. All have Wheeler bottoms covered with 12 inches of gravel and 27 inches of sand meeting AWWA requirements.

The Minneapolis-Honeywell filter consoles include equipment such as loss of head and rate of flow indicators, local and remote control switches, backwash flow indicators, and four air switches that signal hydraulically operated butterfly valves. The Pratt butterfly valves control the flow of filter influent and effluent.

A 42-inch line carries filtered water to the 5-million-gallon clearwell. This tank is 224 feet long by 185 feet wide with a maximum water depth of 17¾ feet. Water from the wells also enters this tank through a 36-inch line.

Two 42-inch lines run from the clearwell to the high service pump station and a 36-inch line leads to the filter backwash pump. High service pumping equipment consists of:

- **Two 4,680 gpm Peerless units**
- **Two 4,320 gpm Allis-Chalmers units**
- **One 4,320 gpm Fairbanks-Morse unit**
- **Two 7,050 gpm Fairbanks-Morse units**
- **One 14,400 gpm Worthington unit**

All are electric motor driven. A new 18-mgd pump will be installed this summer.

Economy Features

The relative scarcity of water in this area plus the fact that Odessa buys its surface water from the Colorado River Municipal Water District at 23 cents per 1,000 gallons called for a rather rigid water conservation program at the plant itself. To reduce waste to a minimum, all but the dirtiest water is pumped back into the system for re-treatment rather than to the sludge lagoon when the sedimentation and flocculation basins are being cleaned. This amounts to a savings of some 4½ million gallons each time both basins are cleaned, and this is done about six times a year.

Similarly, all wash water from the filters is also pumped back into the system (the rapid mixer in this case) and re-treated. Filters are cleaned every day, and this savings in water amounts to about 500,000 gallons each day. Yearly savings come to approximately 100 million gallons, or more than the maximum quantity pumped in 12 days. This amounts to about $43,000 per year.

Other items that result in operating and future expansion cost savings include instrumentation and design. Complete instrumentation with Minneapolis - Honeywell equipment permits efficient operation with a minimum of manpower. The plant can be tripled in capacity without the addition of buildings, only the filter galleries will have to be en-

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Avenue G — one of Gothenburg's wide, modern concrete streets

No street maintenance needed in Gothenburg, Neb.

...all the streets are paved with concrete

Small cities as well as large find big advantages in concrete streets. Gothenburg, Nebraska, for one—with just 3,000 residents—has used nothing but concrete since 1929, now has 130 blocks of safe, attractive concrete streets.

City officials and homeowners alike are proud of these streets that have done wonders for the looks of the whole town. They like the safety of concrete, too. Its grainy surface provides dependable skid resistance. Add the high night visibility only a light-colored pavement gives.

But most important is the money Gothenburg saves by going concrete all the way. These concrete streets have received no maintenance at all! That means there is no expensive maintenance equipment for the city to own and operate.

In Gothenburg, these savings every year go right back into more modern, attractive concrete streets!

Municipal officials everywhere are finding the same satisfaction in watching their concrete street programs grow—in mileage, in popularity and in savings to the community. If you want to know more about concrete streets, or how PCA can help you with your street paving program, write for free information.

PORTLAND CEMENT ASSOCIATION

Dept. A7-4, 33 West Grand Ave., Chicago 10, Illinois

A national organization to improve and extend the uses of concrete

MODERN Concrete

larged. This is most important for Odessa is growing rapidly (37% growth in the last three years).

Before the plant was built—just a few years ago—the well sources showed signs of failing, making water rationing a necessity. The average annual rainfall in this area of only 16 inches made matters worse, and although surface water was available, the city had no facilities to treat it. The city was like a desert—it needed more water.

The new plant delivers that water, increasing the usable water supply by about 200%. As water holes are invaluable to the desert traveler, the water treatment plant is invaluable to Odessa citizens. It is truly a municipal oasis.

Long Beach to Sell Salt Water

Long Beach, Calif. is building a series of salt-water distribution systems to control subsidence of land in the Wilmington Oil Field. The systems are to be an integral part of the world's largest water injection project and will restore underground pressures in the field. They will take salt water from underground sources and distribute it to "wells" for injection into subsurface areas at extremely high pressure.

The plans approved by the State Lands Commission for two pumping plants and distribution systems were prepared by M. A. Nishkian and Company of Long Beach. The cost of these systems is estimated at $3,375,000. The two pumping plants will have capacities of 1,247,400 gallons per day and 659,000 gallons per day, and eventually will supply salt water daily to 98 injection wells at pressures ranging from 850 to 1,500 psig.

Expansion

At the present time the city has four water injection plants in operation with capacities of 5, 0.8, 3 and 2 mgd. The two latter plants are currently being expanded to 5.2 and 2.8 mgd, respectively. Two additional city-owned plants are presently under construction, each with a planned capacity of 2.1 mgd. Ultimate plans call for one or two more plants to serve the part of the Wilmington Oil Field which underlies the southwest portion of the city.

The salt water will be supplied from underground sources. The natural filtration of the salt water by the earth and its low oxygen content make its use preferable to untreated sea water. The water will be chemically treated to prevent corrosion in the pumps and distribution systems and to prevent bacteria growth in the systems and also in the underground oil reservoirs.

The City of Long Beach assumed the responsibility of owning and operating the water systems in order to accelerate the repressuring program and to prevent delays which could arise through alternative methods. The city-owned and operated systems can be engineered and constructed in far less time than private oil operators in the several areas of the field could manage through a series of cooperative ventures. City financing will reduce the initial capital outlay required of private producers, thus encouraging them to participate in the subsidence control program. The city plans to recover its investment through the sale of the pressurized salt water to the private operators participating in the subsurface repressuring operations.

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"THOSE RESPONSIBLE FOR PROVIDING THE MACHINES ARE TO BE COMMENDED! . . . their initial test in the May Primary proved more than satisfactory . . . Savings of $1,652 in the Primary were reported . . . This would mean savings of $3,304 for the year . . . Savings would therefor more than pay for the purchase . . . Along with effiency and economy is their 'ease of operation and absolute accuracy.'
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Available for service clubs and other interested gatherings, by 60 day reservation on your letterhead—a new 18 minute 16 mm color film illustrating potential benefits of Automatic Voting Machines.
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New Ford F-100 4-wheel drive Styleside pickup handles heavy loads and makes its own road.

ALL FORD-BUILT . . . FACTORY-ENGINEERED . . . FOR GREATER SAVINGS!

Go *Ford*-ward for 4-wheel drive performance at big Ford savings. New Ford 4 x 4 Pickups have the power and traction to go most anywhere. They're factory-engineered from the ground up for extra stamina, and all Ford-built with your choice of economical Short Stroke power—Six or V-8.

There's new versatility too, with two power take-off points in the transfer case to drive winches, saws, diggers, or other equipment. And there's new driving ease. You shift smoothly between 2- and 4-wheel direct drives while moving. Ford's *driverized* cab provides new riding comfort and modern styling.

Ford 4-wheel drive trucks are available in ½- and ¾-ton pickups, chassis-cabs and ¾-ton stake models. See your Ford Dealer . . . and save hundreds of dollars on America's lowest-priced 4 x 4's with Six or V-8 engine!

FORD TRUCKS COST LESS

LESS TO OWN . . . LESS TO RUN . . . LAST LONGER, TOO!

County-Wide Urban Zoning Ordinance

Chicago's Cook County provides controls for its unincorporated areas; abolishes farm zoning

The first metropolitan area zoning ordinance to embody modern planning techniques and skills has been prepared for the 450 square miles of unincorporated territory immediately adjoining the City of Chicago.

The new Cook County Zoning Ordinance abolishes farm zoning entirely in the 450 square miles it covers. As recently as 1945, Cook County had more than 3,500 farms covering 372 square miles. However, the continuing series of population explosions which have rocked the big cities since World War II marked "finis" to this agricultural activity.

The political and governmental leaders of Cook County made the first start towards meeting the problems of the Chicago metropolitan area in 1940 when they adopted a zoning ordinance for the suburban areas. However, despite their good intentions, they were not blessed with the ability to foresee the future or to forecast World War II and its accompanying baby boom and related problems.

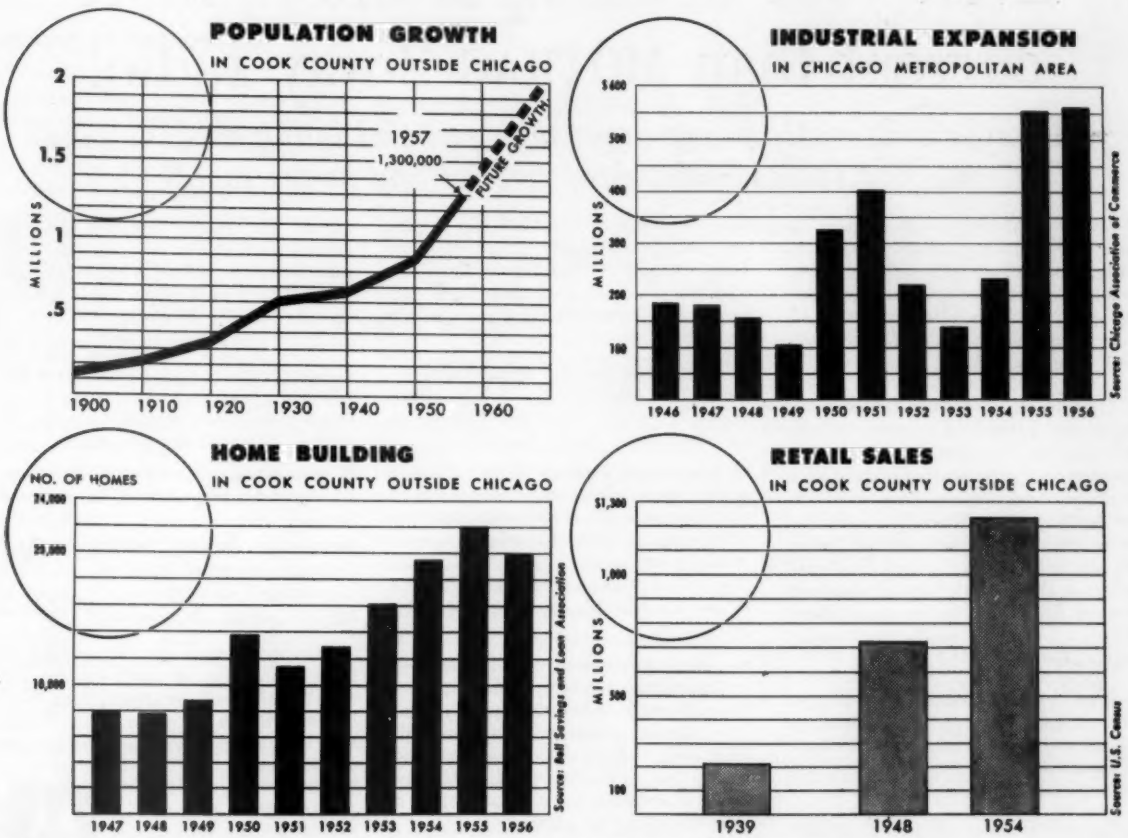
As a result, the 1940 ordinance soon proved unsatisfactory. When builders presented plans which were not even remotely covered by this antiquated document, they were forced to file petitions for amendments based solely on their individual wants and desires.

As such amendments multiplied first by the hundreds and then by thousands, the zoning law grew weaker and weaker—and finally became virtually meaningless. Meanwhile population fever charts were bursting day by day.

It was at this stage that Cook County Board President Daniel Ryan and Commissioner John J. Duffy, chairman of the zoning committee of the county, decided that it was time to act and act with decisiveness.

Fortunately, the Cook County Board had the opportunity for first hand analysis of their problem. The City of Chicago had just adopted a model zoning ordinance, prepared under the direction of Harry F. Chaddick, consultant in industrial development and planning and zoning problems. Mr. Chaddick's chief associate in the Cook County zoning job is George Krannenberg, former city manager of Grand Rapids, Mich., and member of the American Institute of Planners.

Using aerial maps, and a detailed field survey, Mr. Chaddick prepared a list of every structure in suburban



These charts show how subuhban Cook County has grown and indicate w hy new zoning is needed.

(Advertisement)

Even your dome light draws more current than MOTRAC 2-way radio!

Motorola ends costly power drain problems and idling expense with the first fully transistorized receiver and power supply

What makes Motorola MOTRAC radio the most economical and reliable 2-way radio unit in the annals of mobile communications? Not just one or two new features, but a score of revolutionary design advancements that bring you the very finest set ever engineered.

1. On standby—the MOTRAC receiver draws only a trickle of current—actually 80% less than conventional units—with an occasional increase to maintain crystals at proper temperature for precise on-frequency operation (even your dome light draws more current than MOTRAC radio). Yet, this radio is always poised for instant reception, thanks to its fully transistorized receiver. Result: no life-shortening battery drain . . . no more costly, unnecessary engine idling.

2. MOTRAC radio eliminates the most common maintenance problems: vibrators in the power supply and tubes in the receiver. All are replaced by stabilized long-life transistors.

3. Up to 40°F cooler operation means less aging and strain on components. Reason: no more receiver tube filaments; a more efficient power supply; a battery saver switch to cut off transmitter filaments; and two separate heat sinks—one for power supply, another for transmitter output tubes.

4. The MOTRAC receiver operates directly from the 12-volt battery; its low voltage operation results in less electrical strain on components, assures long life.

5. Traditional Motorola engineering and production excellence are evident throughout MOTRAC radio. Transistors undergo three separate checks, including a week of stabilization at 185°F. Only industrial-type tubes, especially suitable for the rigors of mobile operation, are used in the transmitter.

6. Patient production testing continues under stringent quality control procedures. First, each module is tested. Then each chassis is independently checked. Next, each radio is tested as a composite whole. Finally, the entire radio and associated accessories are checked out as a complete operating system.

7. MOTRAC radio is conservatively designed. The receiver has *even higher* reserve gain than conventional Motorola units to assure *peak performance* for many years. Also, power supply transistors are operated under an exceptionally high safety factor to assure extended service life.

8. Completely independent receiver and transmitter chassis, with no power supply in common, assure reliable reception regardless of transmitter performance.

9. MOTRAC radio offers you 2½ to 3 times higher audio output than conventional sets.

10. MOTRAC radio is designed for split-channel operation. *Both* receiver and transmitter meet critical split-channel stability frequency requirements.

Experienced users have been field testing MOTRAC radios for many months. The results are in—and they're excellent. We'd like to tell you *all* about them. Write, wire or call: Motorola Communications & Electronics, Inc., A Subsidiary of Motorola, Inc., 4501 West Augusta Blvd., Chicago 51, Ill., SP 2-6500. MOTRAC is a Motorola, Inc. trademark.

Cook County. Nothing was too small to be listed and catalogued as to its use and potential.

For the first time, the Cook County government knew exactly how many people lived in the Chicago metropolitan area—where they lived, worked and shopped. Remaining was the task of translating this knowledge to intelligent planning.

Of the 450 square miles of unincorporated area, 90% will be devoted to residential use under the new ordinance. This is in keeping with the desire to retain the suburban areas as prime residential areas.

No residence will be allowed with land of less than 10,000 square feet, though in some areas, zoning provides for luxurious 5-acre lots. In between are the various residential classifications, including provision for multi-family construction where population density indicates its necessity.

No more than 2% of the 450 square miles was allocated for business and commercial use. These have been carefully allocated on the basis of scientific estimates of population trends in the immediate future and also in long-range forecasts.

Industrial Expansion

Touchiest point of all was the manufacturing section of the ordinance which forced some townships to face the facts of industrial expansion for the first time. Every modern method was used in an attempt to provide performance standards which would protect the residential character of the suburbs and still provide enough industry to make the communities economically secure. Approximately 8% of the total was allocated to manufacturing.

The new ordinance represented abandonment of the old method of cataloguing industry and limiting specific industries to specific zones.

The old method led to multiplicity of industrial classifications and made it too easy to end up with zoning by court decree instead of sound planning. Instead, a series of performance standards which guaranteed elimination of noise, odor, vibration, and other undesirable features associated with manufacturing, yet was acceptable to industry, was devised.

Manufacturing Classes

The M-1 class, basic manufacturing designation, is small, compact, and so designed that it can be located adjacent to residential property without discomfort to the residents. M-2, larger and with more traffic problems, is designed for locations more remote from residential, but contiguous to shopping centers and large commercial developments.

M-3, or heavy manufacturing, is designed for locations remote from residential, yet accessible to transportation — rail, water and motor. M-4 is a special designation for truck-terminal areas, designed for locations remote from residential developments.

Also written into the ordinance was an administrative provision which protected such requirements as provision of adequate parking space for every structure, from residence through manufacturing. Furthermore, the Chaddick ordinance allows zoning by persons other than the property owner—a provision designed to put an end to the "spot zoning" which has resulted from insistence on limiting amendments to the property owner.

The new ordinance must still stand the test of public hearings. But come what may, it provides a worthwhile blueprint for tomorrow —an effort which combines technical progress, good public relations and common sense.

Engineers Chided For Weak Leadership

A consulting engineer who counts municipal governments among his largest group of clients berated civil engineers for not taking a more active part in present-day society.

Francis S. Friel, of Albright and Friel, Philadelphia consulting engineers, asked members of the American Society of Civil Engineers:

"Are we content simply to do no wrong? Do we not sometimes fail to take the initiative, where we are highly qualified, in suggesting good city and regional planning, adequate flood control, effective programs of resource conservation. Are we unwilling to take part in the drudgery and hard work in civic committees to promote our plans?"

Failure to take the lead, he said, is the equivalent of poor, and sometimes unethical practice. It is a failure to live up to the high standards of good engineering.

Mr. Friel is president of the American Society of Civil Engineers. His comments were delivered before the business meeting of the Society held recently in Cleveland.

(*Advertisement*)

CAST IRON PRESSURE PIPE TO BE MADE BY GRIFFIN WHEEL CO.

Select Council Bluffs, Iowa, Site

COUNCIL BLUFFS. Cast iron pressure pipe for water and gas will be made by Griffin Wheel Company at its Council Bluffs, Iowa, plant, it was announced by Goff Smith, President. Mr. Smith also announced the formation of the GRIFFIN PIPE DIVISION, to manufacture and market pipe products.

GOFF SMITH
President

Target 1960 Market

Production facilities will be completed in a few months, and first deliveries of pipe are scheduled for March, 1960. Modern, automated machines will produce pipe by the Delavaud process of centrifugally casting metal in permanent, water-cooled molds, in 4- to 12-inch diameter sizes.

Modern 20-Ft. Lengths

To reduce labor costs in installing pipe, Griffin machines are designed to manufacture pipe in 20-foot lengths, as opposed to conventional 16- and 18-foot lengths. Pipe joints will include slip-on, mechanical joint, and bell and plain end, and will be made in accordance with American Standards Association, American Water Works Association, and Federal Specifications for water and gas distribution.

New Research Center

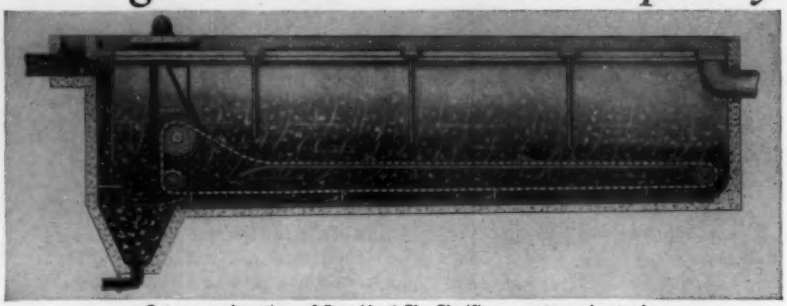
Facilities for pipe research and the development of new pipe products will be included in Griffin's new research center, under construction in Bensenville, Illinois. In addition to basic research, activities will center around metallurgical, chemical, and ceramic problems, and the improvement of quality control techniques.

American Steel Foundries Subsidiary

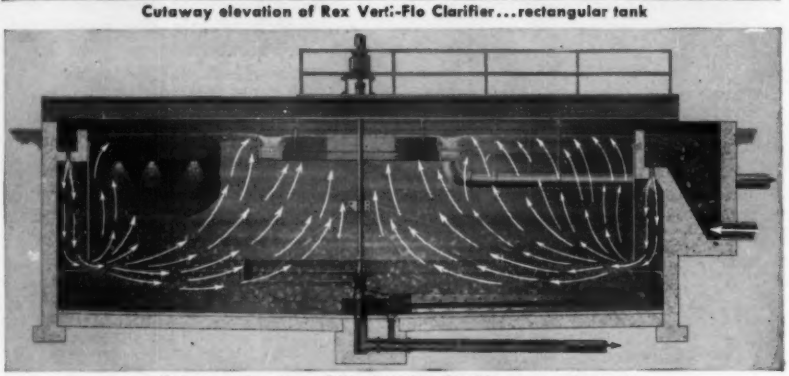
Founded in 1877, Griffin operates 6 iron and 5 steel foundries producing car wheels for the railroad industry, and a brass foundry. The company also produces specialty ferrous castings, including centrifugal castings of iron and combination iron and steel. Griffin is a subsidiary of American Steel Foundries, which has 26 plants in 15 states and Canada.

How To Increase Sewage Treatment Plant Capacity

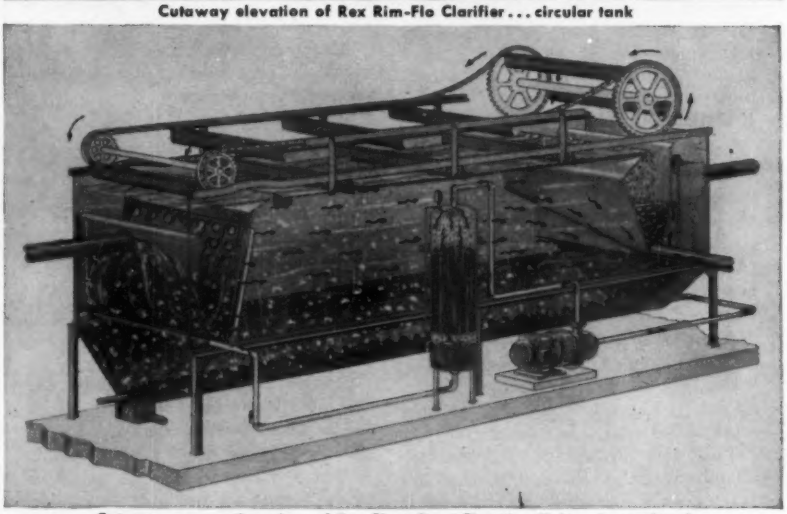
The problem of providing overload relief for sewage treatment plants or increasing plant capacity is a major headache for thousands of American cities. Actually many cities have found an economical solution to the problem through the use of modern equipment that provides substantially increased plant capacity from existing structures. In other cities use of this equipment has materially reduced the cost of new or additional facilities.



Cutaway elevation of Rex Verti-Flo Clarifier...rectangular tank



Cutaway elevation of Rex Rim-Flo Clarifier...circular tank



Cutaway perspective view of Rex Float-Treat Flotation Unit...in steel tank

Increasing Settling Tank Capacity

Through the use of a unique principle, the capacity of a conventional horizontal-flow settling tank can be at least doubled and assure a far clearer effluent. Called the Rex Verti-Flo, this unit transforms the conventional tank into a series of small, vertical-flow cells by use of a system of collecting troughs, adjustable weirs and partitioning baffles. Maximum weir length is provided by adjustable, V-notched weirs entirely around the periphery of each cell. Weir length is adjustable to control the flow in each cell so that the full tank's volume is utilized and short-circuiting within the tank minimized.

Verti-Flo can be installed in existing tanks with a minimum of structural alterations and assure at least double present capacity. In new tanks, Verti-Flo provides up to four times more capacity so that smaller sized basins can be used, assuring important cost savings on both construction and equipment costs.

Increasing Capacity of Circular Clarifiers

A new hydraulic principle has made possible greatly increased capacity with loadings in excess of twice those of conventional settling tanks. This new clarifier, called the Rex Rim-Flo, provides maximum hydraulic efficiency, maximum use of tank volume, greatly increased capacity and simple scum removal. Influent is introduced into a feed channel entirely around the periphery of the tank. A series of ports in the feed channel directs the influent downward into the tank between the tank wall and a vertical skirt. Velocities of this flow are extremely low and it is properly diffused. There is no harmful tangential flow.

Solids promptly drop out of suspension onto the tank floor and the flow is directed gently upward to a central effluent trough. Short-circuiting is practically eliminated. Existing circular tanks can usually be modified to provide the advantages of Rim-Flo, assuring increased capacity at exceptionally low cost.

Providing Overload Relief

In many sewage treatment plants, overload relief for existing facilities and greater flexibility of the complete system can be provided by the addition of a dissolved air flotation unit for separation and thickening. The Rex Float-Treat System is a process in which suspended organic matter or chemical floc is removed from the raw waste by flotation. Flotation is accomplished by introducing millions of tiny air bubbles into the process liquid. The bubbles attach themselves to particles in suspension and carry them to the surface for removal. This system can also be used for the combined purposes of separation and thickening in a single tank.

The speed with which the Rex Float-Treat System effects an efficient separation increases the efficiency and capacity of the entire plant...provides effective overload relief. Float-Treat can often be installed in existing concrete tanks for maximum economy.

For Complete Information

on how you can increase the capacity of your plant at minimum cost with these or other Rex equipment or processes, see your consulting engineer or write **CHAIN Belt Company,** 4648 W. Greenfield Ave., Milwaukee 1, Wisconsin, for informative literature.

Workmen use a light pry against wood at bell end of a pipe section to make the joint watertight.

Most of the work is being done in built-up areas. Here clay pipe is stored ready for installation.

Brand New and Big

Over 100 miles of sewers needed to cover 11 watersheds and an area of 11.92 square miles

About two years ago nearly 40 power shovels started digging in the Borough of Bethel, Pa., about a half hour's drive from Pittsburgh. This marked the beginning of actual construction of a large scale sewer project designed to do away with septic tanks in this rapidly growing area. The project includes the laying of about 102 miles of sewers, about 90% all-vitrified clay pipe, a $1,725,000 sewage treatment plant and a $135,000 pumping station and force main. The sewers constitute about 18.3 miles of trunk lines and 78.7 miles of 8-inch collector lines.

The Chester Engineers of Pittsburgh are supervising the project for the Municipal Authority of the Borough of Bethel with Charles W. Tanner serving as project manager.

Work on a preliminary report started about the middle of 1952 and the report submitted early the following year. One of the earliest phases of the work consisted of acquiring right-of-way easements. Some 1,500 such easements were required for the project. Many homes in the area are built on hills and in many cases the sewers had to be installed in the rear yards of the downhill residents.

Large Staff Required

The Chester Engineers had two draftsmen working 1½ years on right-of-way maps alone. However, with almost two score contractors working on the project, about 60 persons from the consultant's staff were required to carry out all phases of the work, with a regular "inspection corps" working out of the Bethel office.

Unfortunately, many utilities went into development projects in the area without regard to where sewers might be placed, as sewers were not included in the original planning. Consequently, the crews had to look for utilities everywhere.

In most cases the contractors used shovels not exceeding ¾-yard in capacity. Compressed air devices speeded proper backfilling, with rubber-tired dozing or front-end loading equipment handling most of this work.

To keep damage to existing landscaping at a minimum, many residents employed tractor-mounted ditchers to excavate for house connections. The numerous easements also added to the volume of clean-up and restoration work.

Financing

To start the project, the Authority borrowed several million dollars from a Pittsburgh bank. Assessing property owners approximately $7.82 per front foot for some of the sewer lines will take care of part of the costs. Once the final construction costs are awarded, the Authority will float a bond issue for the remainder of their financial needs and to repay the bank loan. Sewer rental fees will be used to pay off the long-term bonds.

Test No. 1—How would your fleet score in economy in the world's toughest taxi town?
Ford is New York's favorite '59 cab by 2 to 1!
TAXI

Can your fleet cars pass these two tough tests?

IF THEY'RE FORDS THEY CAN and *do*, 365 days a year.

Ask any cab owner. He'll tell you FORDS SAVE MONEY. They save because standard Ford engines—Six or V-8—run on regular gas . . . saving up to $1.00 a tankful. Fords go 4000 stop-and-go miles between oil changes. He'll say maintenance is lower, too, and probably mention the new aluminized muffler that lasts *twice* as long.

Ask any police car driver. He'll say FORDS ARE RUGGED. They're built that way with 5 steel roof beams, 5 steel cross members in the frame, extra heavy-duty brakes, clutch, springs, and shock absorbers. But he's sure to put comfort high on his list. For plenty of head and leg room and doors that let you in and out easily are big items in a long police day.

And while you're at it, ask your neighbor. Chances are he's one of the people who has made Ford the best-selling '59 car! He knows Fords are built for people . . . and savings. So, when he sees Ford fleets in government service, he knows his tax dollar is getting the best ride possible.

59 FORD FLEETS

FORD DIVISION, *Ford Motor Company*

Test No. 2—How would your fleet score in rugged, round-the-clock police work?
Ford is America's first choice in police cars!

Before Trying Metropolitan Supergovernments

. . . first make intelligent use of the governmental machinery already existing

By EDWARD CONNOR
City Councilman, Detroit, Mich. and
Supervisor, Wayne County, Mich.

Instead of trying to set up new, untried theoretical supergovernments for our metropolitan areas, one ought to make full use of proved, existing governmental organizations. We in metropolitan Detroit have done this and have been pleasantly surprised. In some respects we accomplish more than we would as a single, giant government. And we still maintain governing bodies well within the reach of the individual citizen.

Detroit has a metropolitan area that embraces six counties covering slightly less than 4,000 square miles. Within it are 63 cities, 40 villages and 110 townships. It has a population of 4,200,000. This probably will increase by 2,000,000 in the next two decades.

Joint Action

With this dynamic growth, we no longer can afford to repeat past mistakes. Many problems cannot be solved by any one local community without regarding its neighbor. Many problems cut across political boundaries. Areas changing from rural to urban become torn by understandable conflict. Strong, rough-handed measures only aggravate the situation. Mutual effort and cooperation can soften matters. This is the dedicated goal of our Inter-County Supervisor's Committee.

The origin of the committee was simple. In 1954 Detroit metropolitan officials became troubled over regional difficulties. At that time I was a member of Detroit's 12-man City Council and as such, ex-officio member of Wayne County's Board of Supervisors. The Wayne Board had recently elected me its chairman. In this capacity I arranged a luncheon meeting with the chairmen of the Oakland and Macomb County boards, Wayne County's closest neighbors. I hoped to gain knowledge for my new position from the counsel of men long experienced in this role.

The first meeting was one I will never forget. The Oakland County Chairman came with his attorney, apparently determined to make no statement without legal counsel. The chairman of the Macomb County Board, a 19-year veteran, frankly stated that he never had visited the Wayne County Board, only a few miles away. I was startled to find no evidence of communication or neighborliness, or joint effort to cope with common problems. We had strong, efficient governmental organizations headed by dedicated men but never had used them to solve the pressing problems that hurt us all.

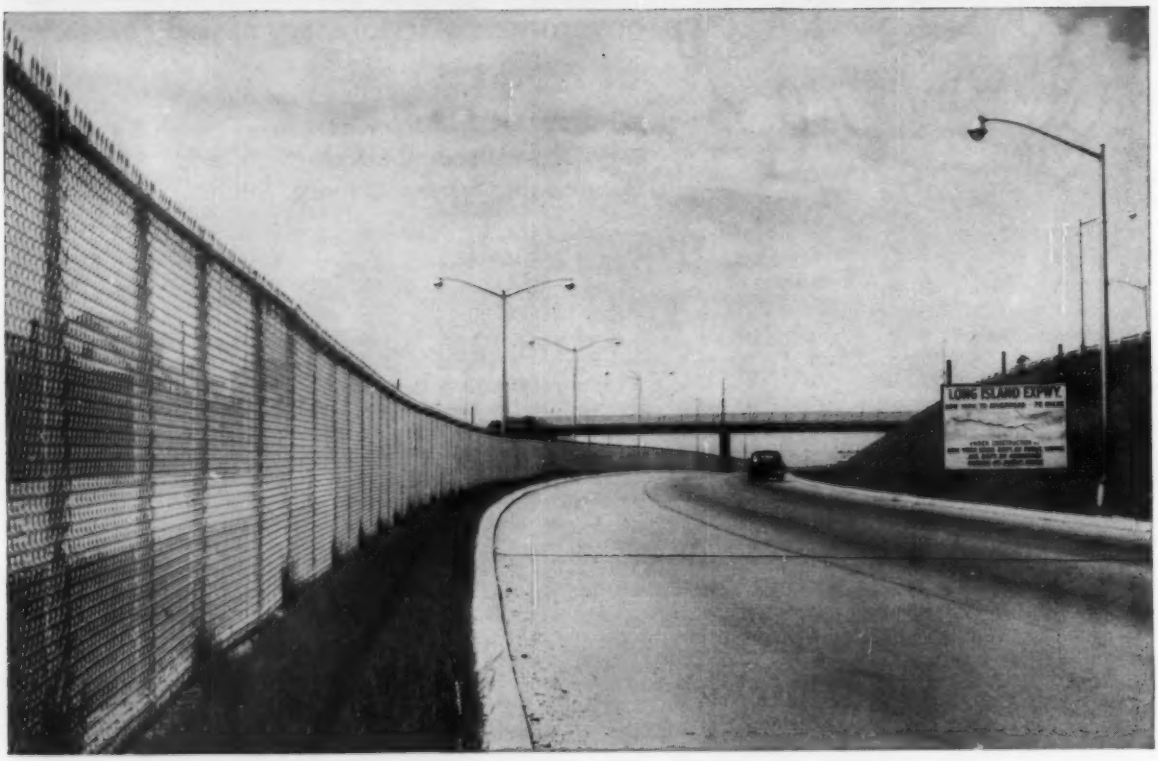
Another luncheon followed, with the chairmen of two other county boards present. Soon, all joined in a recommendation to their respective boards that each establish its own separate committee on inter-county problems and relationships. This resulted in what we now call the Inter-County Supervisors' Committee. Working committees deal with roads, water, sewage and waste disposal, sports, and recreation. Shortly thereafter, the sixth county joined as a full partner.

The joint committees uncover the facts, and then recommend solutions which in general are acted upon by each separate county board. Thus, each county preserves its autonomy, but the mutual effort gets results. We take advantage of the talents in all good local governments that enable them to get the most complicated jobs done. These governments already have the power to tax, the right of eminent domain, the power to build and operate facilities of all kinds. The powers needed already exist. Our committee takes full advantage of them.

Bipartisan Power

Then we have another significant advantage. Within the Detroit metropolitan area is located 54% of Michigan's population. Of the total 110 members of the state legislature's lower house, 51 come from our six counties. This voting strength has even greater significance. Wayne County is traditionally Democratic. Two others are strongly Republican. The balance are more or less divided. But when the six counties agree, it ceases to be a partisan issue. Two years ago, we presented a package of proposed bills, regional in scope, to the state legislature;

Aluminum fencing leads to lower ultimate cost



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Year after year of exposure to corrosive atmospheres does not impair the looks or usefulness of chain link fencing of Alcoa® Aluminum. Installations made over 30 years ago prove it's the maintenance-free fence that never requires a protective coat of any kind, ages to a pleasing soft gray.

Aluminum fencing imposes no restrictions on landscaping, allowing for permanent adjacent planting without the worries of access for upkeep and spraying. The cost of aluminum for right of ways, around toll-road entrances, down divider strips, diminishes with each year of maintenance-free service.

Check these other advantages you get with Alcoa Aluminum:

High Strength—Average tensile strength of Alcoa's new alloy is 57,500 psi.

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Readily Available—Reliable manufacturers and erectors in 48 states. Contact your nearest Alcoa sales office.

For your copy of 12-page illustrated booklet and a summary of recently bid prices on 4-ft-high and 6-ft-high all-aluminum fencing, write to Aluminum Company of America, 2058-G Alcoa Building, Pittsburgh 19, Pa.

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it contained 13 items; of these, 11 were promptly enacted into law. We expect approval of the remaining two in the present legislative session.

As a result of our work, we now have an inter-county highway commission created by legislative act with power to develop a metropolitan, area-wide plan for major expressways and thoroughfares. When such a plan is approved by the respective counties, no structure will be built or permitted on the proposed right-of-way even though actual condemnation of that right-of-way may be some time in the future.

Today, we are developing a new airport. In the past, Detroit had to provide leadership, even though the facilities were to be located outside its boundaries. We currently have employed a consulting engineer to resurvey our airport needs. We can expect action on a metropolitan level to solve a problem that affects all of us in this air-minded age.

We also are moving as a metropolitan area to correct water and sewerage problems under the sponsorship of our Inter-County Supervisors' Committee. We have taken advantage of a grant from the National Sanitation Foundation of $100,000 to study water needs. This is spearheading action that will involve an investment of $125 million for area-wide water resources.

University Aid

Through the leadership of our committee, four major universities in our area have organized a Technical Advisory Committee composed of representatives from each of the universities' schools or departments. This includes sociologists, economists, medicine, law. These educators are making a thorough and scholarly search for information needed to make the communities in our area better for living, work, business, industry and general human satisfaction. Several of these committees have met in a three-day conference sponsored by our committee; the expenses were underwritten by a $500 grant from the Greater Detroit Board of Commerce and $500 from the UAW-CIO, an indication of genuine widespread interest and support.

Preserves Principles

As we all know, we are among those favored few nations that govern themselves along principles that recognize the dignity and importance of the individual. Moreover, we all know that the government closest to the individual is his local government. We feel that it would be a tragic thing to destroy this local government, supplanting it by some area-wide organization which would be beyond the reach of the individual citizen.

However, we also know that if the local governments do not perform the tasks required to solve problems associated with today's urban living, then the state or federal governments will step in. They always do, since it is their duty. Consequently, American government has become more and more bureaucratic.

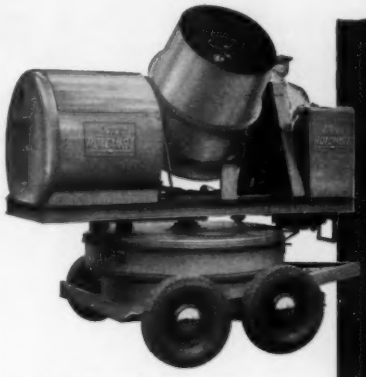
Our experiment with this inter-county committee has shown that local government can do the job if it desires. We find that there is real, constructive power within our metropolitan areas; all that is required is to put it to work.

Water Use Climbs

Water requirements for domestic purposes in this country are rising. Recently, increase in the rate of withdrawal has been about one gallon per person per day.

Livestock uses about 1.5 billion gallons a day. Irrigation consumes the most water for life uses from concentrated supplies. Rough estimates place this consumption at 65 billion gallons per day.*

* E. A. Ackerman & G. O. Lof, *Technology in American Water Development*, The Johns Hopkins Press, Baltimore, Md.

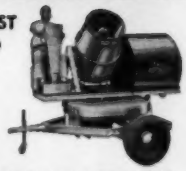


MODEL 300 ROTOMIST
today's biggest capacity mist sprayer — 300 gal. tank, 60,000 cu. ft. of air per minute.

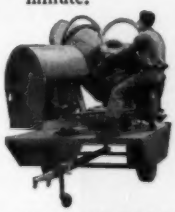
NOW... 4 John® BEAN ROTOMIST® SPRAYERS

For versatile, community protection . . . a model to fit every requirement – every budget

Now, four famous John Bean Rotomists give you the widest selection of mist sprayers available. For shade tree spraying and fly and mosquito control, every model offers unmatched performance, plus big savings in time, labor and materials. All Rotomists feature exclusive, straight-through air delivery for maximum drive and volume, thorough coverage and faster rate-of-work. Ask your John Bean Dealer for details on the model that meets your needs and budget.



MODEL 100 ROTOMIST
100 gal. tank, 28,000 cu. ft. of air per minute.



MODEL 75 ROTOMIST
75 gal. tank, 19,000 cu. ft. of air per minute

MODEL 50 ROTOMIST
can be used with most any high pressure sprayer— 12,000 cu. ft. of air per minute.

Ask for details on 60 GPM Hydraulic Sprayer

fmc FOOD MACHINERY AND CHEMICAL CORPORATION

John BEAN LANSING 4, MICHIGAN SAN JOSE, CALIFORNIA
Division of Food Machinery and Chemical Corporation

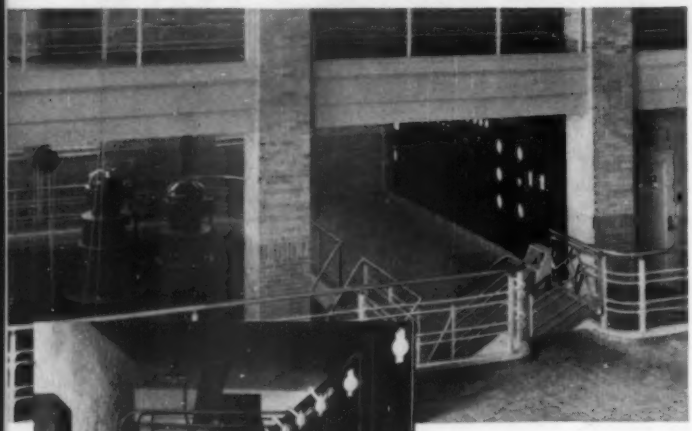
Send me: ☐ New Rotomist Sprayer Catalog ☐ New Royal and Royalette Catalogs ☐ Facts on Mosquito Control ☐ Facts on Dutch Elm Disease Control

ATTACH COUPON TO CARD OR LETTERHEAD — GIVE NAME AND ADDRESS

"AS SPECIFIED" Wilmette's Water Treatment Plant and Pumping Station is Equipped with Cutler-Hammer Control

WILMETTE, ILLINOIS WATER TREATMENT PLANT & PUMPING STATION
Capacity: 15,000,000 gallons per day
Superintendent of Public Works: Mr. A. Lund
Chief Operator: Mr. W. W. Frye
Consulting & Design Engineers: Alvord, Burdick & Howson
Electrical Contractor: Sievert Electric Company

Main Entrance and pump room New vertical type 50 Hp low lift pumps and 300 Hp high lift pumps were installed in the existing pump room. The operator's panel was modernized to monitor both the new and existing pumping equipment.



Main Control center Cutler-Hammer Automatic Reduced Voltage Starters for the new low and high lift pumps and existing horizontal type pumps are grouped in the main control room located directly behind the operator's panel.

Auxiliary Control center A new four-section Unitrol® provides a compact control center for the new vertical type Wash Water Pump, Drain Pumps, Breaker Panel Disconnect, and custom-built meter unit.

The Wilmette, Illinois Water Treatment Plant and Pumping Station is typical of scores of Municipal Water Works which recently have been expanded to keep pace with their rapidly growing communities. Here the new 9,000,000 gallon per day addition has more than doubled the capacity of the plant which was built during the middle thirties. And in both instances Cutler-Hammer Control was installed "as specified" to direct and protect the electric motor driven pumps and equipment.

This repeated specification and selection of Cutler-Hammer Control is indicative of the users satisfaction with its performance during the past twenty-five years, and confidence in its operation in the future . . . Cutler-Hammer Control is built better to last longer.

Further, it pays to install Cutler-Hammer Control because it never becomes an "orphan." Complete factory records are maintained so that whenever pumping facilities are expanded the control equipment "grows" without having to re-engineer the total job. This feature alone has saved thousands of dollars for many rapidly growing municipalities.

Be sure you have the latest facts on Cutler-Hammer Control . . . its many features assure better plant design, important savings during installation, and dependable trouble-free operation. Write Dept. N203, Cutler-Hammer Inc., Milwaukee 1, Wisconsin.

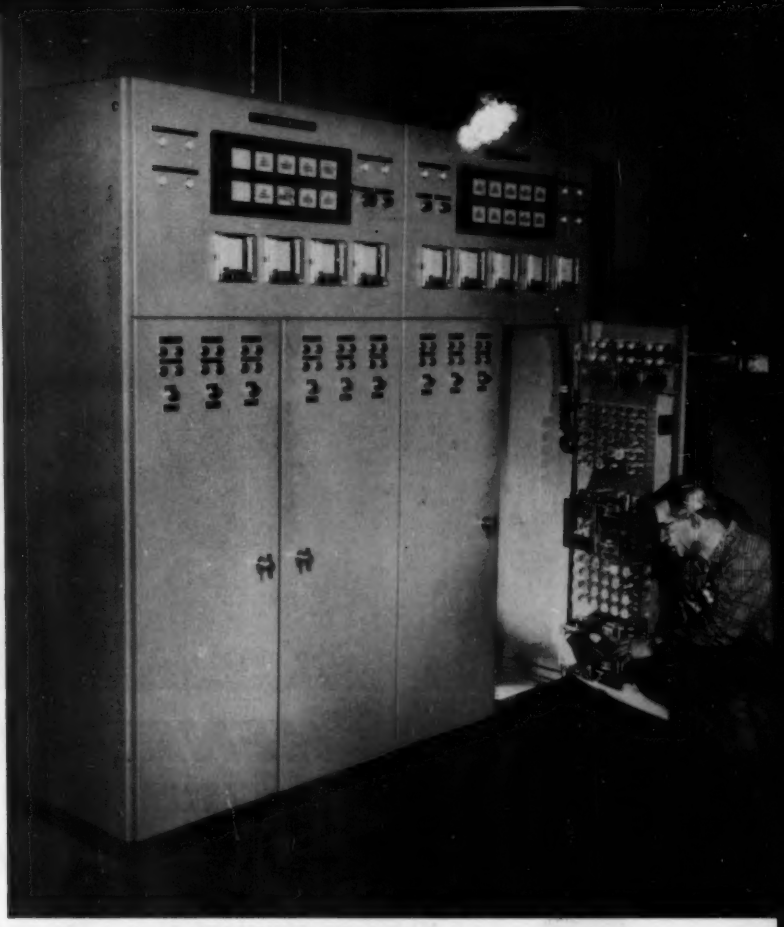
CUTLER-HAMMER CONTROL C-H

CUTLER-HAMMER

Cutler-Hammer Inc., Milwaukee, Wis. • *Division:* Airborne Instruments Laboratory. • *Subsidiary:* Cutler-Hammer International, C. A.
Associates: Canadian Cutler-Hammer, Ltd.; Cutler-Hammer Mexicana, S. A.; Intercontinental Electronics Corporation.

reach of the individual citizen.

Telemetering and scanning equipment mounted on a pole box at the 85-foot-tall Hunter Road Standpipe. The horizontal tube at the lower left is a heating unit to prevent freeze-up during cold months.



At central telemetering and control panel Chief Operator Richard Hayden demonstrates a micrometer check to detect source of possible trouble. Measurement of current flow monitors water system.

Communications and Telemetering Solve Oakmont's Problems

Frank L. Baird

By **FRANK L. BAIRD**
Manager and Secretary
Oakmont Water Authority
Oakmont, Pa.

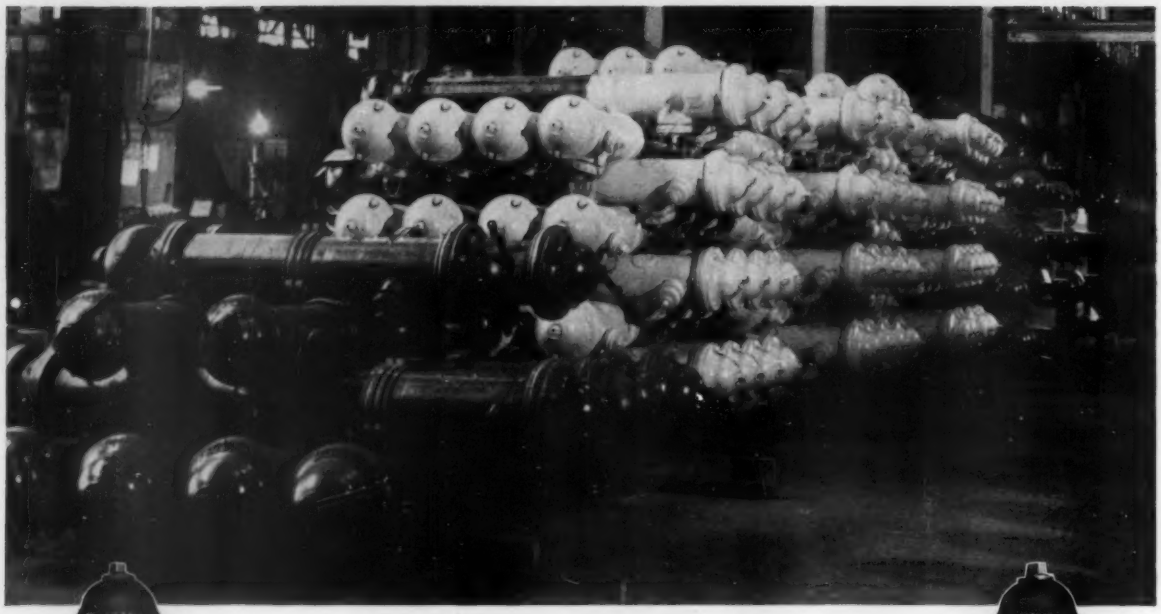
There was a time when communications, to a man in the water works field, meant a phone call reporting that the pumps had been turned off at No. 1 reservoir and that a man was on his way to turn the No. 2 pumps on. Or communications might have meant only the office memo which was diligently posted on the bulletin board each Monday morning.

But with new emphasis on communications throughout all phases of business today, in no field is immediate and accurate communication more essential than in the modern water system.

Information about and automatic monitoring of supplies available in all storage reservoirs, instant warning of trouble in remote pumping stations, and permanent records of flow and distribution are all made possible through "telemetering," the most repeated word in communications today.

Central Control System

The Water Authority of the Borough of Oakmont, Pa., located in the northeastern corner of the rapidly growing Greater Pittsburgh area, realized in the spring of 1958 that its expanding facilities de-



NEW K-10
Standard Hydrant

KENNEDY'S NEW FIRE HYDRANTS K-10 • K-11

The new standard of quality construction

OUTSTANDING features of the new KENNEDY Hydrants include "O" Ring Seals, a weather seal and a pressure seal, and an absolute minimum number of working parts. In addition, all operating parts are easily accessible without excavation; these hydrants have straight thread seat ring; simple, positive operation with minimum friction loss; certainty of drainage to prevent freezing after use.

The improved famous Safetop model

WITH all the features of the K-10, the K-11 also has the famous KENNEDY Safety Breakable Section. In case of a smashing impact, the K-11 Safetop model ruptures cleanly at the Breaking Ring and the stem coupling without water flooding. With compactly packaged collision repair parts, one man, with regular tools, can place the K-11 back in service in a matter of minutes and cut repair costs by 80%.

Both Hydrants conform to A.W.W.A. specifications and are made in three sizes, 4, 4½ and 5 inch, with a wide variety of pipe end connections available. For details, write for new Bulletin No. 591.

New K-11 Hydrant
Improved Safetop Model

See these new Hydrants at the A.W.W.A. Convention in Booth No. 92, San Francisco, July 12-17

KENNEDY VALVE MFG. CO.

ELMIRA, NEW YORK

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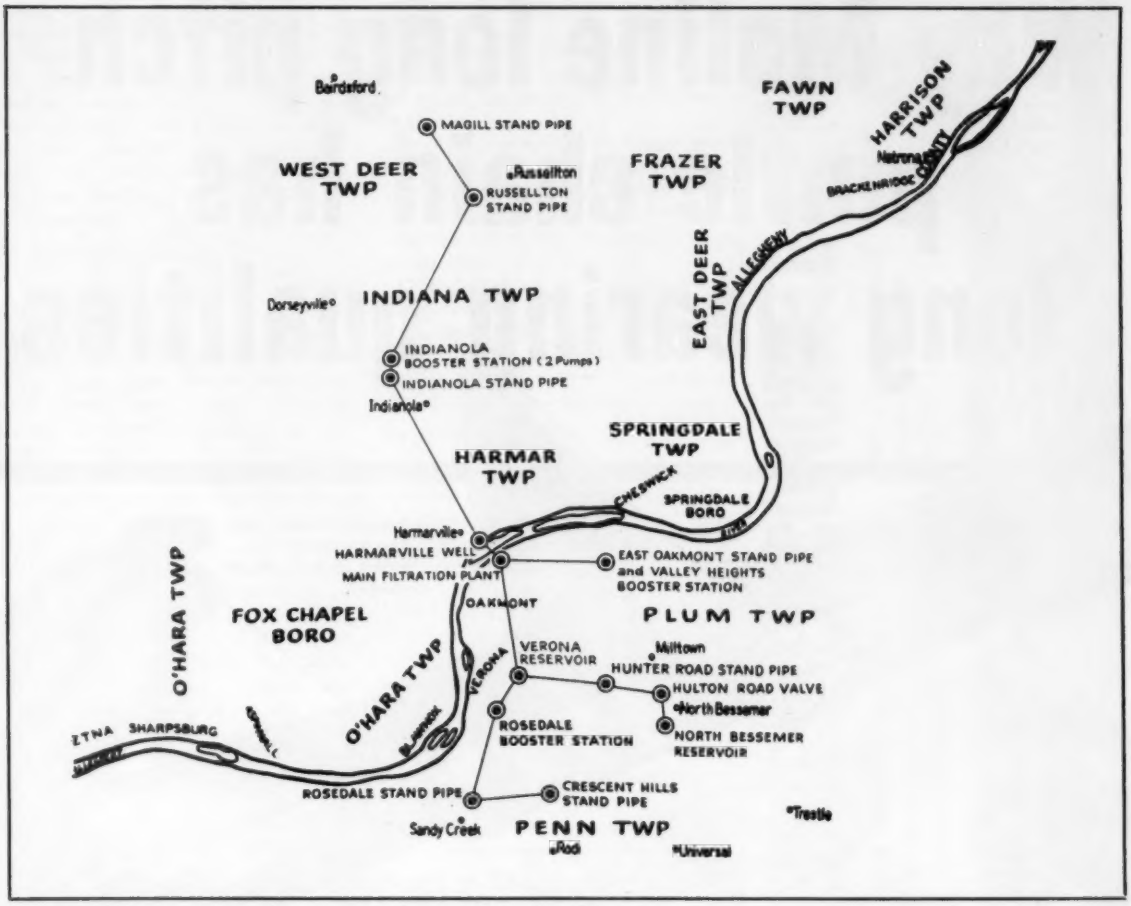


Expanse of Oakmont Water System makes it especially adaptable to telemetering. Check can be made on Magill standpipe in seconds from main filtration plant which is centrally located.

manded a centralized telemetering and control system.

Treatment, pumping, distribution and storage facilities of the Oakmont Water Authority lie on both sides of the Allegheny River. The Magill standpipe is almost 12 miles from the main building and filtration plant. Under the old method of inspection and reporting, a man was sent out to each pump station and storage facility to check on operation and water levels. This job became increasingly difficult and more time-consuming as the system was expanded and distances became greater.

At the suggestion of the Chester Engineers, Pittsburgh, the Authority investigated installation of telemetering equipment in terms of cost, practicality, and performance. Since the Authority at that time was instituting vast improvements in its existing system, feasibility of providing the latest in telemetering equipment seemed especially assured.

Most systems experience gradual evolution to telemetering control, following a normal growth pattern, with telemetering equipment installed as it becomes necessary. At Oakmont, however, we made the transition in one sweep. We were able to concentrate on the whole problem at once, a most difficult thing to do in "piecemeal" development. Consequently, we are certain that we saved considerable money and time through "total" planning.

Used on Reservoir

Actually, we had been telemetering our main reservoir (Verona) for a number of years. All pumping was controlled manually. As a matter of fact, while we have a telemeter transmitter and a circuit scanner at the Verona reservoir today, we still operate this facility manually. The water that goes into it must first pass from the Allegheny River through our filtration plant. As purification is carried on, there are certain periods when it is not desirable to have the pumps running continuously.

The water level telemetering signals at the reservoirs and standpipes are transmitted over leased telephone lines of the Bell Telephone system. At the filtration plant in Oakmont, a master control panel receives these signals and provides a continuous chart recording of the water levels in each standpipe or reservoir.

Reservoirs and standpipes have Bristol telemeter transmitters and Femco circuit scanners. Transmitters send back to the central control panel continuing records of water levels, while circuit scanners continually check designated stations in the system for discrepancies in operation.

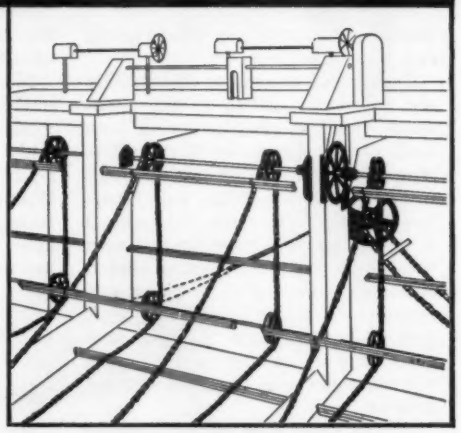
When the water level at any one

Why Moline long pitch pintle chain has long wearing qualities

Forged T-head pins are locked in... won't turn... wear longer.
Closed-bearing construction keeps grit out... provides extra long wear.
Attachment has large face plate for secure mounting of wood slat.

For a serviceable, long wearing chain at a moderate price, sewage treatment plants prefer Moline Long Pitch Pintle Chain. It is designed and proportioned to provide great strength at minimum weight... is stronger than detachable chain and less subject to wear. Moline Pintle Chain is assembled with forged T-head pins with cotters. This construction prevents the pins from turning... prevents the entrance of grit... minimizes wear. Special analysis metal with superior corrosion resistance is available in this chain.

Write for information and prices or phone your local Moline representative.



LEADERS FOR 60 YEARS

Moline MALLEABLE Chains

MOLINE MALLEABLE IRON CO.

St. Charles, Illinois

Specializing in the Manufacture of Chains

standpipe or reservoir reaches a predetermined critical level, whether high or low, a horn sounds in the filtration plant and a light flashes continuously on the meter control panel. By pushing a button, the operator can silence the horn, and reset it, but the light will continue flashing until the trouble is corrected.

How It Operates

For example, assume that the horn has sounded and the flashing light on the control panel indicates that the North Bessemer reservoir water has fallen below minimum safe level (the Valley Heights pumps are always operated so that North Bessemer has priority on demand). At the time of the signal, Valley Heights has been pumping water to North Bessemer with one pump.

Because North Bessemer has priority, the second pump will cut in automatically to expedite the filling at North Bessemer. While North Bessemer is being filled, the Crescent Hills standpipe sounds the alarm demanding water. As soon as North Bessemer is filled the pumps automatically switch from parallel pumping to series pumping to boost to the level of Crescent Hills.

It's all done automatically. No one had to be sent out to turn valves or to check on the storage tanks.

Our telemetering equipment was purchased from Femco, Inc., Irwin, Pa., whose splendid cooperation during installation and initial weeks of operation of this equipment was invaluable.

Our personnel are not electrical engineers, of course, and there was argument at the early part of our planning that we would have to employ trained people to cope with the electronic equipment.

Training

But Femco's trained specialists were on hand during the entire installation period, instructing our men in the use and care of the telemetering equipment. During early months of operation, we could count on their assistance day or night in case of trouble. Today, our men—who six months ago would have run for cover at the mention of telemetering—take great pride in explaining to visitors just how the system works.

The expense has justified itself in

Absolute bubble-tight shut-off with . . .

S.P.KINNEY

RUBBER SEATED BUTTERFLY VALVES

. . . manufactured in complete conformance with AWWA Specification C-504-58T, for pressures to 125 p.s.i.

- ✔ Duck reinforced seat permits easy installation and assures long life
- ✔ Streamline design of disc & seat assures minimum turbulence and low pressure drop
- ✔ Sturdy durable construction for dependable service
- ✔ 6" to 96" sizes
- ✔ Manual or automatic operation

Get complete information by writing today for Bulletin 750

Installations at:

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S. P. KINNEY ENGINEERS, Inc.
CARNEGIE, PENNSYLVANIA

MAINTENANCE FREE PRESTRESSED CONCRETE TANKS

If you have a water storage problem, call or write for Bulletin T-22.

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- OVER 2000 TANKS IN SERVICE
- NO MAINTENANCE COST
- 75% CONSTRUCTION COST SPENT LOCALLY
- LOWEST OVERALL COST
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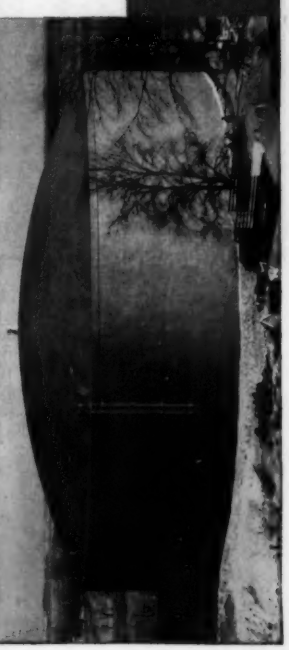
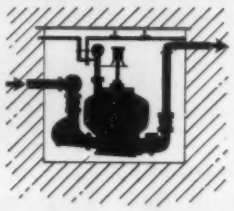


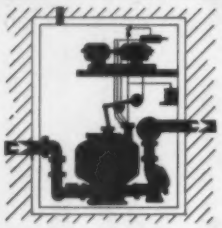
Which sewage lift station is best for your job?

TOPS IN DEPENDABILITY AND SAFETY



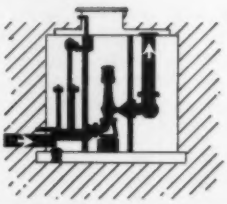
Concrete or steel underground station with Shone® Type S pneumatic ejector, mechanically controlled (warranted 25 years). Remote air supply. Nothing electrical; maintenance free; operates even under water. Life measured in decades. For municipalities and large subdivisions.

SURPRISINGLY VERSATILE, INEXPENSIVE



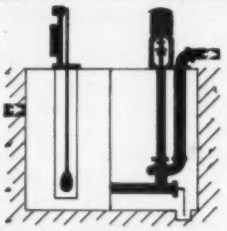
Shone® Type SAC station, underground in concrete vault. Mechanically controlled ejector (warranted 25 years) has its own compressor. Frequently less costly than package stations. Finds use everywhere.

PACKAGE STATION



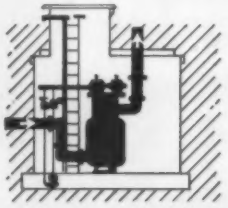
Quality underground station with vertical, short-coupled (Series 6260), dry pit centrifugal pumps. Quality design and equipment give good service life at nominal cost. For small permanent stations, growing areas.

LOW FIRST COST—EASY INSTALLATION



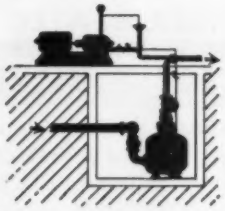
Two-compartment steel basin with centrifugal vertical wet pit pump. Pumps are not submerged; motors protected from flooding. Low first cost; fast installation. For buildings, small growing subdivisions.

ULTIMATE IN PACKAGE DESIGN



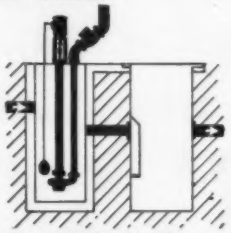
Package underground station with Expelsor® pneumatic ejector, electrode controlled. Sanitary and dependable, low maintenance, easy to service. Recommended for municipal and subdivision applications.

BUILDING TYPE STATION



Expelsor® pneumatic ejector station designed for use in buildings. Compressor is on basement floor; ejector on floor below. Sealed installation gives safe, odorless handling of sewage indoors.

SPECIAL PROBLEMS?



Centrifugal vertical wet pit pumps with adjoining settling basin. Good for areas where sand or old sewers create problems. Special pump construction for abrasive or corrosive conditions, industrial wastes.

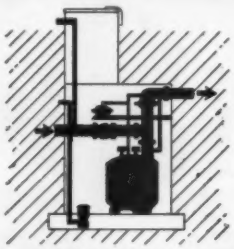
The answer depends on the job. Is it to be a temporary station? What about future loads? How much maintenance will it get? What type of power is available? These and many other questions must be weighed carefully and without bias. In making the decision, why not put Yeomans 61 years' experience (59 on underground stations alone) to work? Because Yeomans builds **the only complete line** of sewage lift stations in the industry, recommendations are **impartial** and in your best interest. Phone, wire, or write now.

YEOMANS

2000-3 N. Ruby St., Melrose Park, Ill.

SPECIALISTS IN SEWAGE LIFT STATIONS—THE COMPLETE LINE

MAXIMUM RELIABILITY—MINIMUM SPACE



Package underground station. Expelsor® pneumatic ejector has two compartments, duplex compressors and controls. Excellent service accessibility. Especially suited for subdivision and municipal lift stations. L-5911

the significant reduction in trips around the system, alone. But beyond this, there have been a number of other concrete advantages. These include:

1. High pressure surges have been eliminated by setting the telemeter to stop the pumps before the altitude valve closes. Thus, there are no complaints from customers whose domestic hot water tank relief valves "popped off" in high line pressure areas.

2. We have eliminated the "layover periods", which existed in some of our booster stations. Before telemetering, a pump waited until a timer went through its cycle before it would start. Now our pumps follow the demand on the system rather than a fixed time basis for control.

3. Water level recording gives us indication of sudden drops in levels and points out pipeline breaks. This gives us opportunity to make immediate repairs, minimizing water mediate repairs, thereby minimizing water loss as well as damage to property.

4. The level recordings also provide definite records of peak consumption periods during the year, during certain months, and even during particular days of each week.

Once, Monday was a peak water-use day because it was always washday. Today's housewife, by virtue of her automatic appliances, has turned the tables on us and we can no longer count on Monday as the washday in the majority of homes in our area.

5. By studying level recordings for each reservoir or standpipe, our operators can become familiar with the individual characteristics of each tank. They detect abnormalities which can be corrected immediately. Before telemetering, any such condition could have become extremely severe before discovery, necessitating costly repairs.

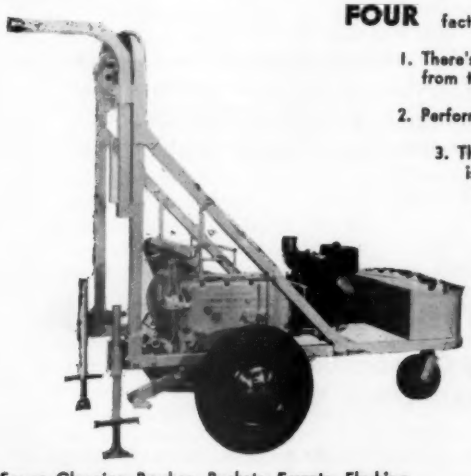
We've had the system in operation for six months and have had no difficulties whatsoever with the equipment. Our men are extremely proud of their new-found knowledge of electronics. In addition our customers are getting better service.

This is communications in every sense of the word. I have often wondered how we in Oakmont ever got along all these years without it.

TURCO

MAXI-POWER Sewer Cleaning Unit

Note the STIFF LEGS—quickly adjustable to compensate for uneven ground.



Sewer Cleaning Brushes, Buckets, Ferrets, Flushing Bags, Rods, carried in stock for immediate delivery

ONE unit consists of:

TWO machines, located at the ends of the sewer section to be cleaned.

TWO models (501 and 502) each with 3-speed transmission, enable you to get the exact power and line speed you need:

	1st gear	2d gear	3d gear
#501	11000 lbs.	9000 lbs.	7000 lbs.
#502	15000 lbs.	12000 lbs.	9000 lbs.

FOUR facts to consider:

1. There's a unit exactly right for any city, from the largest to the smallest.
2. Performance is easy, quick, thorough.
3. The original full flow of the sewer is restored.
4. Each part is designed and engineered for long life.

Write for catalog

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Division of

Chas. H. Stehling Co.

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Milwaukee 12, Wis.

FLOODED HIGHWAYS HINDER TRAFFIC

OLD heavy cast iron draingrates, averaging at best 40% clear opening, often fail to carry off rain water fast enough during heavy downpours, resulting in flooded highways—particularly at underpasses. Also, cracked draingrates must be replaced.

With open steel mesh draingrates, larger clear openings reduce the likelihood of flooded highways considerably. Irving "Dryway" Draingrates are 75% open for greater drainage and are made of steel bars on edge, not subject to cracking.

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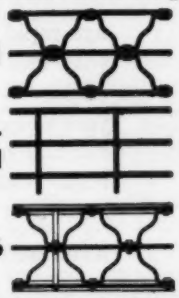

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Get the facts, too on how AERO'S *tax mapping service uncovers hidden revenue.*

The Children's Corner, bright and attractive, features a puppet theater in the shape of a medieval turret (right, background) and a "story teller's chair" of antique design, on which the librarian is seated.

The attractive and functional card file cabinets at right are part of Remington Rand's new Designer Line, made of steel reinforced aluminum and birchwood in the New Orleans Public Library.

Modern Furniture Graces New Orleans Public Library

In New Orleans, a brand new $3½ million, 900,000-volume Public Library is now serving the famed old city. Three leading architectural firms designed the building, and a specialist from Remington Rand's Library Bureau developed the attractive shelving and furniture layout that completes a picture of modernity, harmony and efficiency.

The library's exterior combines attractiveness and utility. Gone is the wrought iron grillwork of the old Creole home and a solar screen of anodized aluminum surrounds the building on three sides. In it, a network of vertical and horizontal louvers protects the interior from direct sunlight. Inside, all interior walls have been eliminated, leaving vistas for mind and eye.

A new kind of library furniture is used here for the first time, and later the design will be installed in the St. Louis University Library and the Kansas City Public Library. It is Remington Rand's Designer Line, the result of collaboration among architects, librarians, researchers and engineers and the designer Norman Cherner. It is made of aluminum reinforced with steel and has birchwood exteriors.

Mr. Cherner sought to develop furniture with a "warm feeling which combined metal and wood and will last as long as the library." Every bit as durable as the massive oak furnishings of older libraries, it aims to be lighter and brighter.

The building's first floor contains three major departments—Louisiana History, Business and Science—as well as periodical and reading sections. A mezzanine floor, reached by stairway or automatic elevator, contains the Children's, Young Adults' and Popular Reading departments.

On the second floor are the Music and Art Department, and an auditorium seating 150, four meeting rooms accommodating 20 people each, the library, catalog section, business offices, and a staff lounge and lunchroom with kitchenette.

Music lovers can listen at any one of a half-dozen turntables, equipped with a dozen headsets, or they can borrow records to take home. Those who enjoy fine paintings can borrow any of 150 framed reproductions of renowned works of the past half-century. All are on open display in specially-made accordion-type Library Bureau hangers.

As official custodian of the New Orleans archives, the Public Library has added importance. As a public center for information, recreational reading and esthetic development, it is vital to the community.

Head Librarian John Hall Jacobs and George K. Logan, Assistant Librarian, worked with Tulane University's School of Architecture in the development of prototype plans and models. Mayor deLesseps S. Morrison himself proposed the site of the building. Shelving and furniture layout for the entire library was developed by Miss Edna Voigt, Remington Rand Library Bureau consultant.

Modern Water Rates PART VII

Don't Bother With Discounts on Water Rates

. . . as rewards for prompt payments; or penalty clauses for late payments

Discounts may have value in a cut-rate store, but they don't do much for a water rate except to complicate the figures. Penalties not only complicate the rate schedule, but also irritate the customer, since they are, in effect, a punishment for not being "good" and paying the water bill promptly.

In the past, a great number of water utilities would reduce the water bills, generally 10%, to provide an incentive for prompt payment—within a period of 30 days, for example. Others have made penalty surcharges, generally of the same amount, when payment is late. Theoretically, one can make a good case favoring these practices. The water department incurs extra expense when collecting from delinquent customers, and it seems unfair to make those who do pay promptly shoulder this cost. If the discount or penalty actually does stimulate prompt payment, the billing costs drop and the whole operation becomes more efficient.

Nevertheless, over the years, very few water works men have become convinced that this procedure actually has encouraged the customers to sit down and write out their checks immediately. Most have become aware that the criticism generated by additional charges when a customer is delayed in payment through what he considers no real fault of his own is not really worth the benefit of the charges.

One or two conditions exist that justify discounts in a water rate schedule. If a city should find a way to lower operating costs in the water department substantially, the management would be wise to provide a discount on the existing water rates, rather than draw up a new one. With economic conditions that exist in our country today, one can expect costs to continue to climb. A water user will more readily accept a reduction in the discount than an outright raise in rates.

If a city finds it necessary to raise rates, it might consider the possibility of making a substantial raise, more than actually necessary at the time, and then instituting a discount on the new schedule based on prompt payment. Here again, the city would find it much easier to reduce the discount at some future time instead of readjusting the basic rate schedule. Once a rate schedule has been set, the public generally does not like to see it revised too soon.

However, from the standpoint of encouraging prompt payment, neither the discount nor the penalty does enough good to be worth the bother. The discount aggravates the customer when he fails to get it. The penalty insults him into the bargain.

A Correction

Last month we tried to show how a rate using a service charge is basically the same as one using a minimum charge. However, some way or another, we managed to throw some errors into the rate schedules we used for examples. Correct schedules would be as follows:

Service Charge Method	Per Month	Minimum Charge Method	Per Month
Service charge	$1.20	First 2,000 gals.,	$2.00 (Minimum)
Metered Charge	*Per 1,000 Gals.*		*Per 1,000 Gals.*
First 5,000 gals.	$0.40	Next 3,000 gals.	$0.40
Next 15,000	.25	" 15,000 "	.25
etc.		etc.	

Note that any given volume of water greater than 2,000 gallons costs the same by either method.

AUSTIN, TEXAS

Rates Per Month

Gallons	*Per 1,000 Gallons (Water & Sewer Rate)*	*(Water Rate)*
First 1,500	$ .50	$ .45
Next 2,000	.40	.35
" 12,500	.32	.30
" 34,000	.25	.23
" 200,000	.19	.18
Excess	.15	.14

Rates outside the city limits are 50% additional. Minimum water and sewer charge inside city is $1.25; outside city—$2.25. Minimum water charge inside city is $1.00; outside city—$1.50.

Minimum Monthly Charges

Meter Size (in inches)	*Charges*
⅝ (Water and Sewer)	$1.25
(Water alone)	1.00
¾ (Water and Sewer)	1.25
(Water alone)	1.00
1	3.00
1¼	4.69
1½	6.75
2	12.00
3	27.00
4	48.00
6	108.00
8	192.00

Typical Monthly Costs

Gallons	*Cubic Feet*	*Charges (Water & Sewer)*	*(Water Alone)*
3,000	400	$1.35	$1.20
5,000	667	2.03	1.83
10,000	1,333	3.63	3.33

General Data

Population served 200,000
Miles of mains 675
Services—49,065 all told; 100% metered.
Supply—Colorado River
Treatment—Two rapid sand filter plants. Softening from 190 ppm to 70 ppm. lime. Iron sulphate for floceulant.
Plant capacity ..... 63 mgd
Average demand ..... 30 mgd

Remarks

1. Service lines are provided by city from main to meter, which usually is located adjacent to curb.
2. Inside city, subdivider pays full cost of main extensions in his subdivision. City of Austin refunds

(Continued on page 191)

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NEW!

84-page book tells you how to get better water service for your community!

Gives unique step-by-step method for water service evaluation and trouble-spotting.

Uses case histories to show how improved water service can benefit your community.

Tells how to make your community want—and approve—water system improvements.

"PRICELESS WATER . . . it's your business" is written expressly for water utility managers, engineers, public officials—all those business and community leaders who are alert to the basic contribution good water makes to the life and economic well-being of a community.

The result of months of study, planning and research—"PRICELESS WATER" is edited in four sections:

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Section Three, **"How to turn evaluation into improved water service,"** tells when a preliminary engineering survey is needed. When and how to retain a consulting engineer. How to use his report as a springboard for action. Fiscal agents, and when and how to use them. Also contains a helpful explanation of various financing methods.

Section Four, **"Arousing the public to action,"** is an easy-to-follow, success-proven handbook on public relations. It tells how a soundly conceived PR program can sell your community on water service.

In short, "PRICELESS WATER" is the hard-hitting tool you need to get your community the improved water service it needs. Send the coupon for your free copy, now!

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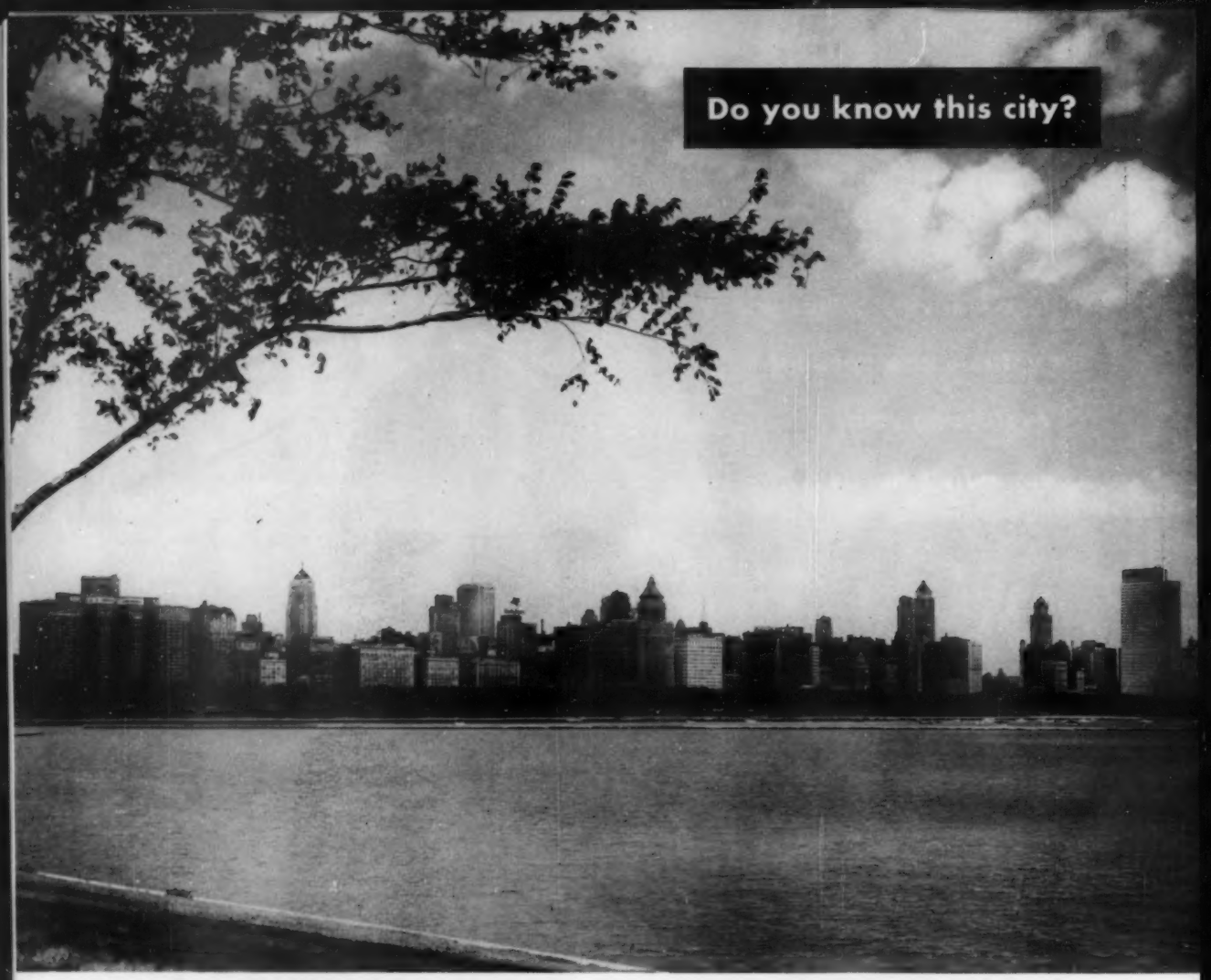

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Chicago . . . capital of the industrial midwest. This vast metropolis depends on De Laval centrifugal pumps to help maintain its high standards of public service. De Laval equipment has been on the job in Chicago for nearly 50 years . . . a remarkable record of dependability.

Today, in fact, the great majority of American cities use De Laval centrifugal pumps. Their design and manufacture are the result of more than 57 years of experience. Units ranging up to 100 million gallons per day are available to meet all water works requirements.

Write for your copies of De Laval Bulletins 1004 and 1005 giving data on these pumps

DE LAVAL *Centrifugal Pumps*

DE LAVAL STEAM TURBINE COMPANY
866 Nottingham Way, Trenton 2, New Jersey

(Continued from page 188)

90% of the cost out of 75% of the revenue from the mains for 25 years and pays 3% interest on the annual balance. No refund is made outside city.

3. The Water and Sewer Department operates and bills for both water and sewer services.

4. IBM automatic billing equipment is used by the Department.

5. Rates were increased by 26% in 1951. Water use was not affected. An increase in tap charges is being considered.

6. No annual charge is made for fire protection. However, customer pays full cost of connection.

ALBERT R. DAVIS
Director, Water and Sewer Department
Austin, Texas

BALTIMORE, MD.

Rates Per Quarter

Cubic Feet		*Per 100 Cubic Feet*
First	5,000	$ .25
Next	45,000	.15
Excess		.10

Rates cover the city of Baltimore, and Howard and Anne Arundel counties

Minimum Quarterly Charges

Meter Size (in inches)	*Consumption Allowed (in cubic feet)*	*Charge*
⅝	1,000	$2.50
¾	1,800	4.50
1	4,000	10.00
1½	7,000	15.50
2	16,000	29.00
3	28,000	47.00
4	64,000	94.00
6	115,000	145.00
8	180,000	210.00
10	255,000	285.00
12	455,000	485.00

Typical Quarterly Costs

Cubic Feet	*Gallons*	*Charge*
1,200	9,000	$3.00
2,000	15,000	5.00
4,000	30,000	10.00

General Data

Population served	1,366,760
Miles of mains	2,290
Services—Total of 318,437, 64% metered	
Supply—Gunpowder Falls and Patapsco River	
Treatment—Complete chemical treatment with sand filtration and fluoridation	
Plant capacity—360 mgd. (rated)	
Average demand—198.39 mgd. (raw water)	

Remarks

1. Although owner pays for service installation, the Bureau installs, owns and maintains service pipe from main to and including meter and meter vault near curb line.

2. Bureau of Water Supply pays the cost of mains in new subdivisions of city.

3. Bureau of Water Supply does not operate sewer services, but it charges for them along with the water bill.

4. In billing IBM automatic equipment used.

5. Water rates last revised, December 1954 when increased 20%. Water use was affected. Further adjustment will be necessary. Sewer service charges in the amount of 50% of the water bill were inaugurated January 1, 1959.

6. The Bureau has an annual inspection charge of $10.00 for each private fire protection service and there is a fire hydrant rental charge of $10.00 on all fire hydrants located outside city limits.

BERNARD L. WERNER
Water Engineer
Bureau of Water Supply
Baltimore 2, Maryland

CAMDEN, S. C.

Rates Per Month

Cubic Feet		*Per 100 Cubic Feet*
First	1,360	$ .33
Next	1,300	.28
"	2,700	.24
"	4,000	.19
"	17,000	.14
"	27,000	.12
Excess		.10

Minimum Monthly Charges

Meter Size (in inches)	*Water Allowance (in cubic feet)*	*Charge*
¾	400	$1.25
1	900	3.00
1½	1,900	6.00
2	3,500	10.00
3	11,400	25.00
4	22,200	40.00

Rates per month and minimum monthly charges are 50% additional outside the city.

Typical Monthly Costs

Gallons	*Cubic Feet*	*Charges*
3,000	400	$1.25
5,000	667	2.31
10,000	1,333	4.29

General Data

Population served	13,000
Miles of mains	65
Services (100% metered)	
Domestic	3,350
Commercial	250
Other	8
Supply—Surface water	
Treatment—Rapid sand filters, chlorine added	
Plant capacity	2 mgd.
Average demand	1 mgd.

Remarks

1. Utility provides service line to property only.

2. Utility provides the cost of new mains within city limits. Outside city the developer must bear full cost.

3. Both water and sewer services are operated by the utilities department.

4. Billing is done on National Cash Register automatic billing machines.

5. Water rates were increased by 47% in 1950. Water use was not affected. No further adjustment is needed.

6. No charge is made for fire protection.

7. Plant capacity is being increased to 3 mgd.

B. M. PAULLING
Superintendent of Utilities
Camden Department of Utilities

CAPE GIRARDEAU, MO.

Rates Per Month

Cubic Feet		*Per 100 Cubic Feet*
First	330	$2.00 (Minimum)
Next	1,170	.45
"	3,000	.45
"	7,500	.40
Excess		.18

The $2.00 monthly minimum is charged for all meter sizes. There is no special rate for users outside the city.

Fire Protection

The city pays the Missouri Utilities Company $5,400 annually for the rental and use of 180 fire hydrants. The city pays $25 per hydrant for all hydrants in excess of 180.

Customers pay ½c per sprinkler head per month and a monthly minimum of $2.50 per connection per month. Customers pay all costs of connecting to existing mains and provide their own line from the water main to the building.

If main extensions are required for the sole purpose of serving the sprinkler system, customers pay those costs also.

Typical Monthly Costs

Gallons	*Cubic Feet*	*Charges*
3,000	400	$2.35
5,000	667	3.69
10,000	1,333	7.02

General Data

Population served	25,000
Miles of mains	92.3
Services (100% metered)	*Number*
Domestic	6,206
Commercial	721
Other	17
Supply—River	
Treatment—Coagulation, chlorination, sedimentation, filtration	
Plant capacity	3.5 mgd.
Average demand	2.3 mgd.

Remarks

1. Utility provides service lines to property only.

2. The utility pays the costs of new mains.

3. The utility is not concerned with sewer services.

4. Billing is done on Burroughs automatic billing equipment.

5. Water rates were raised 43.8% in February of this year. Water use decreased after the revision.

CONRAD H. JOHNSON
General Engineer
Missouri Utilities Company

CLARKSDALE, MISS.

Rates Per Month

Gallons		*Per 1000 Gallons*
First	7,000	$ .35
Next	20,000	.30
"	20,000	.25
"	100,000	.20
"	100,000	.15
Excess		.10

Minimum bill is $1.50 per month (includes up to 3,000 gallons)

Minimum Monthly Charges

Meter size (in inches)	*Charges*
¾	$1.50
1	3.00
1½	4.00
1½	5.00
2	7.50
3	10.00
4	15.00

Special Provisions

Rate W-2—When more than one building or dwelling unit is supplied through a single meter, the minimum bill is increased $1.00 and 2,000 gallons for each additional building or unit. (This provision has been suspended to give property owners time to separate meters).

Rate W-3—When a user outside the corporate limits of the city is supplied water through a meter near the limits and the user supplies all piping and fittings beyond the meter, the monthly charge shall be increased 25%.

RateW-4—When a user outside the corporate limits supplies all piping, hydrants and equipment except services and meters, the monthly charge shall be increased 33⅓%.

RateW-5—When a user outside the corporate limits is furnished all piping, hydrants and equipment by the city or these items are supplied on a refunding basis, the monthly charge shall be increased 50%.

Typical Monthly Costs

Gallons	*Cubic Feet*	*Charges*
3,000	400	$1.50
5,000	667	1.75
10,000	1,333	3.53

General Data

Population served	21,400
Miles of mains	64.5
Services (100% metered)	4,928
Supply—Well	
Treatment—Zeolite softeners	
Plant capacity	10 mgd.
Average demand	2½ mgd.

Remarks

1. Utility provides service line to meter only.

2. Utility provides the cost of the new mains in the city.

3. Sewer service charges were instituted March 1, 1959.

4. Addressograph billing equipment is used.

5. In November 1956 water rates were increased 20%. Water use decreased. No further adjustment is needed.

JESS L. HALEY
Superintendent
City of Clarksdale Public Utilities Commission

ENID, OKLA.

Rates Per Month

Gallons		*Per 1,000 Gallons Inside City*	*Outside City (Minimum)*
First	2,000	$1.50	$2.00
Next	198,000	.40	.50
"	300,000	.32	.40
"	500,000	.22	.28
Excess		.15	.19

The Enid Water Department makes no minimum monthly charges for the various meter sizes.

Typical Monthly Costs

Gallons	*Cubic Feet*	*Charges Inside City*	*Outside City*
3,000	400	$1.90	$2.50
5,000	667	2.70	3.50
10,000	1,333	4.70	6.00

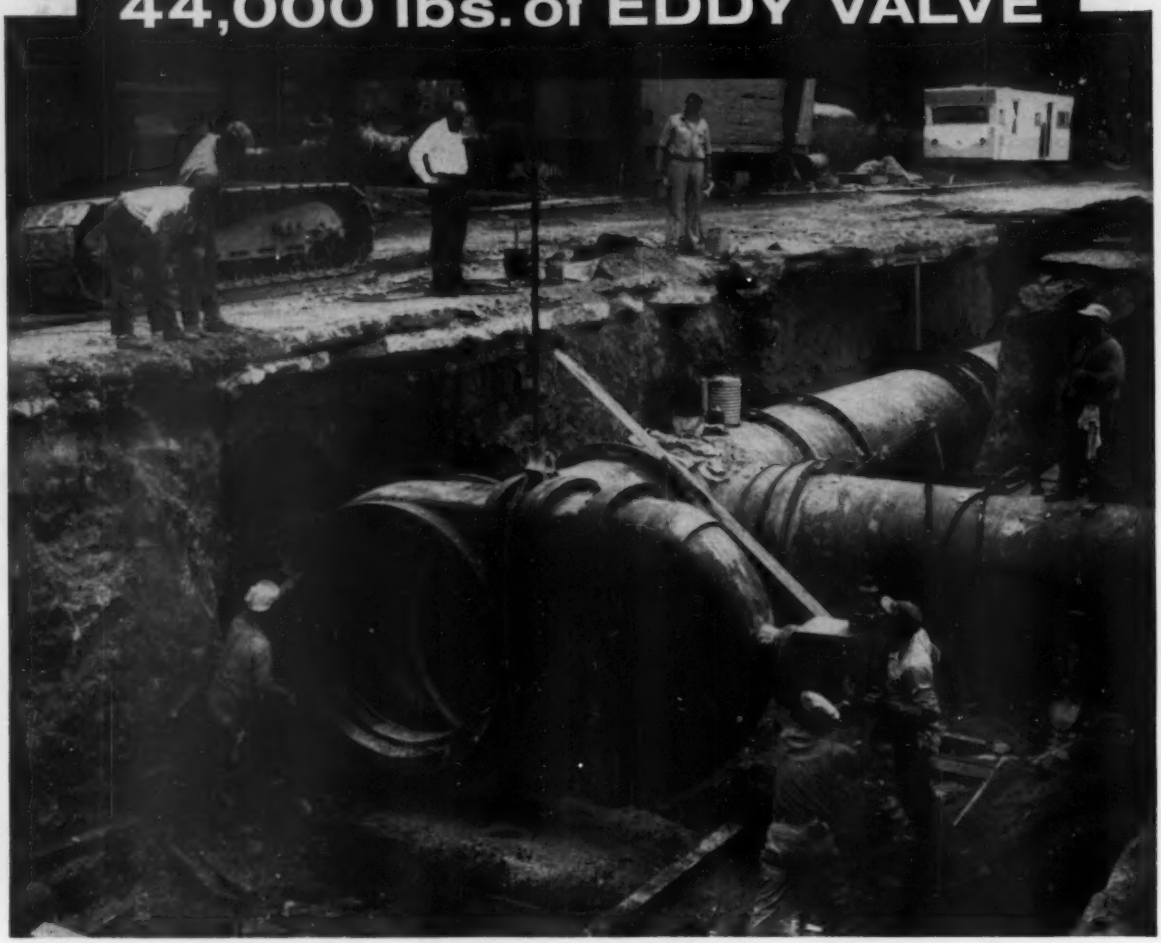
General Data

Population served		42,000
Miles of mains		135
Services	*% Metered*	*Number*
Domestic	100	12,000
Commercial	100	1,000
Municipal	80	30

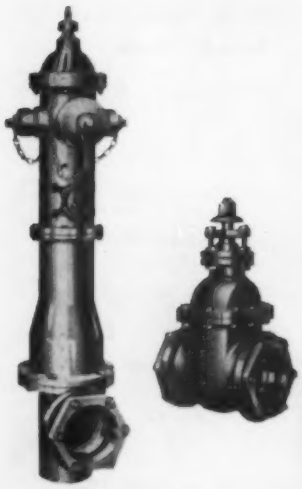
(Continued on page 193)

GOING IN...

44,000 lbs. of EDDY VALVE



Giant 60" Eddy Valves for Buffalo, New York



As part of a major waterworks improvement program, three 60" and fourteen 48" 300 lb. test IBBM EDDY valves have been installed by Fago Bros., Contractors, for Buffalo, New York. Each 60" valve weighs 44,000 pounds; each 48", 21,500 lbs. These are BIG valves...and do a BIG job.

EDDY's ability to supply valves of this size and ruggedness is the result of engineering skill and long experience in meeting almost every service requirement. EDDY manufactures a full line of valves for underground or special service to answer almost any specification for iron body valves.

Whether your requirements are for giant 60" valves like these, or when you need valves for normal waterworks service, the same EDDY experience in serving the engineer and his community is at your service. Why not call EDDY when valves and hydrants first appear in your plans?

EDDY VALVE COMPANY
A Subsidiary of James B. Clow & Sons, Inc.

WATERFORD NEW YORK

(Continued from page 191)

Supply—Wells
Treatment—Chlorine
Plant capacity ..... 22 mgd.
Average demand ..... 4 mgd.

Remarks

1. Water Department provides service lines to property line only.
2. Water Department pays the costs of new mains.
3. Both water and sewer services are operated by the Water Department. Users are billed a sewer service charge ($1.00 for single dwelling unit) along with the water bill.
4. National Cash Register and Addressograph machines are used in billing.
5. Water rates were last revised in May, 1951, when they were increased 25%.
6. Enid makes no fire protection charge.

J. R. Ball
Office Manager
Enid Water Department

MONROE, N. C.

Rates Per Month

Gallons		*Per 1000 Gallons*
First 1,500	(minimum)	$1.50
Next 8,500		.40
" 40,000		.30
" 50,000		.25
" 100,000		.20
Excess		.15

Minimum Monthly Charges

Meter Size (in inches)	*Charges*
½ and ¾	$1.00
1	2.00
1½	4.00
2	6.00
3	9.00
4	12.00
6	15.00

Rates per month and minimum monthly charges outside city are 50% higher than above.

Typical Monthly Costs

Gallons	*Cubic Feet*	*Charges*
3,000	400	$2.10
5,000	667	2.90
10,000	1,333	4.90

General Data

Population served 12,500
Miles of mains 57
Services (100% metered)
Domestic 3,377
Commercial 617
Supply—Surface (impounded)
Treatment—Filtration (alum, chlorine, lime, nuchar)
Plant capacity ..... 3 mgd
Average demand ..... 1.2 mgd

Remarks

1. Utility provides service lines to property only.
2. Main extensions in new subdivisions are provided by the subdivider, who is reimbursed ⅓ his cost as meters are installed.
3. Both water and sewer services are operated by the utilities department.
4. Billing is done on a National Cash Register billing machine.
5. Water rates were last revised in 1938.
6. The City of Monroe does not make a fire protection charge.

J. E. Hinkel
Director of Utilities
Monroe Utilities Department

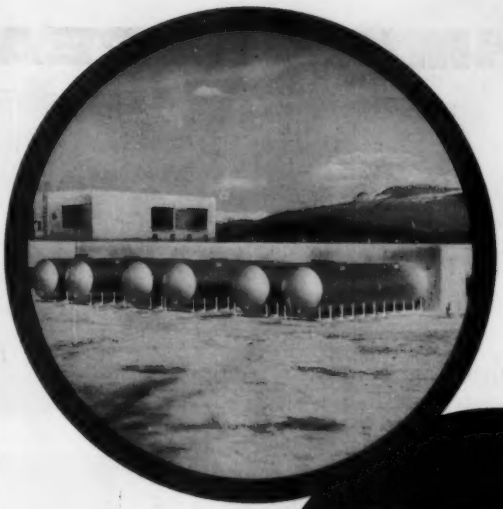
SPARTANBURG, S. C.

Rates Per Month

Cubic Feet		*Per 100 Cubic Feet*
First 2,500		$0.295
Next 4,500		.258
" 20,000		.206
" 23,000		.158
" 150,000		.125
" 800,000		.113
Excess		.087

Domestic consumers are billed bi-monthly. Minimum bill (inside city) is $2.78.
Domestic customers outside city are charged 50% additional to above rates. Minimum bill (bi-monthly) outside city is $4.17.
Discount of 10% for paymen' within ten days of billing date. Discount of 50% for charitable institutions that pay promptly.

(Continued on page 195)



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. . . even when backwashing GFC Multi-Cell Filters

There's no time lost when backwashing GFC Multi-Cell Filters. While one cell is being backwashed, the other cells provide: **(a)** Water for backwashing that cell **with or without** the use of storage tanks or surface reservoirs. **(b)** Uninterrupted filtering to maintain a continuous flow to service lines. Other important features include low-cost installation and GFC's patented non-clogging "Multi-Plate" underdrains. Write for bulletins and equipment data.

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WATER PROCESS EQUIPMENT AMES, IOWA

AERATORS • FILTERS • SOFTENERS • CLARIFIERS
FLASH MIXERS • FLOCCULATORS • PNEUMATIC CONTROLS
ROTARY DISTRIBUTORS • SLUDGE SCRAPERS

(Continued from page 193)

BAUGHMAN SPREAD-MOBILE

the Spreader that's Better ...for ice control Because...

1. IT OFFERS COMPLETE HYDRAULIC CONTROL.

Speed of discharge from Drag Chain Body Conveyor to Positive Drag Chain Cross Feeder is controlled by hydraulic motor. Second hydraulic motor controls speed of distribution, and width of spread.

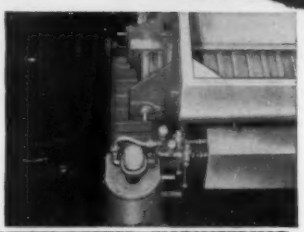
2. EXCLUSIVE "CENTER-SPRED" DESIGN.

Permits spread in front of all four wheels; improves traction, visibility and pattern.

3. ONE-MAN CAB CONTROL.

Width of spread, amount of spread, starting, stopping—all are at driver's finger tips. Driver also controls "Safety Baffle" which dampens spread when approaching pedestrians or cars.

WRITE for illustrated Brochure A-408-B.



New positive drag chain cross feeder, coordinated with main body drag chain conveyor, assures positive flow of material to side mounted distributor.

BETTER SERVICE THROUGH BETTER ENGINEERING
SERVICE AND PARTS FROM 200 SERVICE BRANCHES

BAUGHMAN

BAUGHMAN MANUFACTURING COMPANY, INC.

215 SHIPMAN ROAD • JERSEYVILLE, ILLINOIS

Where you want nothing to grow

SS WEED-KILLER

Gets them *fast*
Gets them *all*
Keeps them *off*

Dolge SS WEED-KILLER is deadly to any weed it hits. After one thorough application of this potent soil-sterilant, unwanted plant life can't even get started through the growing season. ... Safeguards parking lots, terraces, drives, walks, gutters, sand traps, courts, tracks and other areas against ruinous growth....

Reduces fire hazard by eliminating flammable vegetation close to industrial locations.... Finishes such hardy pests as poison ivy, wild honeysuckle, bindweed, crabgrass.... Cuts ground maintenance costs drastically.... One gallon of SS WEED-KILLER in solution treats 1250 square feet on the average.

Write for free, up-to-the-minute booklet on weed control. See your Dolge Service Man

dependable DOLGE WESTPORT, CONNECTICUT

No spot for a breakdown!

KEEP IT GOING AT ITS BEST...USE ONLY GENUINE HAYWARD REPAIR PARTS!

Hayward Buckets are designed with the most efficient construction features known. And only with *genuine* Hayward replacement parts can you be sure of maintaining that same high quality. Cheaper "bootleg" parts reduce efficiency, raise costs and disrupt schedules.

Anticipate any possible breakdown.

Write today for list of genuine Hayward parts.

THE HAYWARD COMPANY
50 CHURCH ST., DEP'T A, NEW YORK 7, N. Y.
Builders of Better Buckets Since 1888

(Continued from page 193)

Minimum Monthly Charges

Meter Size (in inches)	Charges
⅝	$1.39
1	2.64
1½	8.62
2	21.00
3	56.02
4	108.98
6	177.73

Typical Monthly Costs

Gallons	Cubic Feet	Charges
3,000	400	Minimum of $1.39
5,000	667	1.95
10,000	1,133	3.91

General Data

Population served	65,000
Miles of mains	245
Services (100% metered)	
Domestic	16,300
Commercial	624
Supply—Surface water	
Treatment—Complete coagulation, sedimentation and disinfection.	
Plant capacity	15 mgd
Average demand	11 mgd

Remarks

1. Utility provides service lines to meter.
2. Within city limits subdivider must stand cost of main extensions. He is reimbursed by the water works in the amount of 10 times the gross annual revenue from the mains, provided said revenue does not exceed cost of mains. No reimbursement is made outside the city.
3. Spartanburg Water Works neither operates nor bills for sewer service.
4. For billing, Spartanburg uses Burroughs' automatic billing equipment.
5. A 25% increase in water rates in 1957 did not affect water use. No further adjustment is needed.
6. Fire protection charges varying from $25 to $500 per annum are billed on a yearly basis.

R. B. Simms
Superintendent
Commissioners of Public Works of Spartanburg
Spartanburg, South Carolina

KENT COUNTY, R. I.

Rates Per Month

Gallons		Per 1,000 Gallons
First 4,167	Minimum of	$1.67
Next 25,000		.48
" 220,833		.40
" 583,333		.30
Excess		.10

Minimum Annual Charge

Meter Size (in inches)	Charges
⅝	$20.00
¾	20.00
1	20.00
1½	20.00
2	30.00
3	50.00
4	75.00
6	112.50
8	150.00
10	175.00

Fire Protection

Rental charge per hydrant per year $50.00

Typical Monthly Costs

Gallons	Cubic Feet	Charges
3,000	400	Minimum of $1.67
5,000	667	2.07
10,000	1,333	4.45

General Data

Population served			50,000
Miles of mains			160
Services	*Number*	*%*	*Metered*
Domestic	10,586		99.5
Commercial	96		100
Other	2		100

Supply—Water is furnished by well in East Greenwich and Coventry R. I., a 400-million gallon reservoir in West Greenwich, R. I., and a connection with the City of Providence reservoir which furnishes approximately 1 million gallons daily.
Treatment—Chlorination

Plant capacity	approx.	5 mgd
Average demand		3 mgd

(Continued on page 197)

Portable
KOHLER
ELECTRIC
PLANTS
move jobs faster

Lightweight Kohler plants quickly pay back their cost—and more—in work time saved. Easy to truck or move where needed for power tools, floodlights, on street and park maintenance jobs . . . Emergency plants for police communications, treatment and filtration plants, when normal power fails. Sizes to 100 KW, gasoline and diesel. Write for folder E-44.

KOHLER CO. *Established 1873* KOHLER, WIS.

MODEL 1.5M25, *1500 watts, 115 volt, AC. Manual start. 2500 watt AC models available.*

KOHLER OF KOHLER
Enameled Iron and Vitreous China Plumbing Fixtures • Brass Fittings
Electric Plants • Air-cooled Engines • Precision Controls

Pay the man his $40 for new bearings for the last time! THEN BUY THE ALL NEW...

pm

SOLO CONCRETE VIBRATOR

The only NEW DEVELOPMENT IN CONCRETE VIBRATORS IN 25 YEARS! 25,000 V.P.M.—"higher than hi-cycle"—this one man tool saves you $25 per day. It eliminates eccentric bearings and puts the $40.00 per 100 hours you normally pay for bearing replacement *right back in your pocket.*

Write for free demonstration. There's a PM Field Engineer near you.

Pacific Mercury
14052 Burbank Blvd.
Van Nuys, Calif.

ONE YEAR WARRANTY ON ALL PM PRODUCTS

Manufacturers of the Thomas Electronic Organ

FASTEST KILLER
of Brush and Vegetation Yet!
FENCE FIRE
Safe, Fast Acting Spray for Brush and Vegetation

- Kills Fast . . . Complete
- Non Volatile Spray Harmless to Crops
- Only Double Strength Will Kill Grasses
- Works Better . . . Costs no more than other Brush Killers

Do your own spraying with a Gledhill Roadside Sprayer

THE GLEDHILL ROAD MACHINERY CO. GALION, OHIO

(Continued from page 195)

Typical Monthly Costs

Q *Why do* **MORE AND MORE** *Cities Buy Hydrocranes?*

A ONE BIG REASON: IT'S ALWAYS A 2-IN-1 MACHINE!

On your busy schedules you have dozens of hit-and-run assignments that require both a *lifting* machine, then *digging* machine. With one Hydrocrane you have both . . . *on the spot!* The Hydrocrane is a crane — lifts 12 tons. Five minutes later, it can be a clamshell. You simply swing around and pick up the bucket from the handy carrying rack, reeve the wire rope, and you're ready to dig in! Hydrocrane versatility saves you *both* time and money . . . lets you handle a bigger schedule with fewer machines.

Your Bucyrus-Erie distributor will give you all the facts. Ask him to prove them with a demonstration. Call him today or write Dept 2H59 for free bulletin. Bucyrus-Erie Company, South Milwaukee, Wisconsin.

Feature for Feature— it fits your needs!

- **Hydrocranes mount on new or used commercial trucks, no special carriers needed.**
- **Power-set outriggers make the rig rock-steady over any kind of ground.**
- **"Gentle as your hand" metered oil controls are smooth, easy to run, boost both production and your safety record!**
- **Hydrocrane's telescoping boom lets you work in close quarters, or stretch out long for a big 70-ft. reach!**

The Hydrocrane's built-in carrying rack is designed to make attaching the clamshell quick and easy . . . a one-man job!

BUCYRUS ERIE

Over 50% of all Hydrocranes sold last year were REPEAT SALES!

(Continued from page 195)

Remarks

1. Utility supplies service lines to property only.
2. For cost of new mains, customer is allowed 50 feet and charged $2.00 per foot over 50 feet.
3. The Kent County Water Authority has nothing to do with operating or billing for sewer services.
4. Remington Bookkeping automatic equipment is used in billing for water charges.
5. Rates were increased 33⅓% in 1953. Water use was not affected. Further adjustment is needed.

ALBERT V. WOOD
Secretary
Kent County Water Authority
West Warwick, Rhode Island

EUGENE, ORE.

Rates Per Month

Cubic Feet	*Per 100 Cubic Feet Residential*	*Commercial*
First 400	(Minimum)	
From 400 to primary rate limit	$.14	$ .19
First 20,000 over primary rate limit	.065	.09
Excess	.065	.065

Minimum Monthly Charges and Primary Rate Limits

Meter Size (in inches)	*Primary Rate Limit (in cubic feet) Residential*	*Commercial*	*Charges*
⅝	1,000	2,500	$1.15
1	1,600	4,000	1.65
1½	2,400	6,000	2.45
2	3,200	8,000	3.10
3	4,800	12,000	4.90
4	6,400	16,000	8.40
6	—	24,000	13.00
8	—	32,000	18.00
10	—	40,000	23.00

Fire Protection

Per month per inch diameter of pipe	$ .80
Minimum charge per month	5.20

Typical Monthly Costs

Gallons	*Cubic Feet*		*Residential*	*Charges Commercial*
3,000	400	(Minimum)	$1.15	$1.15
5,000	667	(Billed as 600)	1.43	1.53
10,000	1,333	(Billed as 1,300)	2.19	2.86

General Data

Population served	48,000
Miles of mains	160
Services (100% metered)	
Domestic	9,090
Commercial	2,534
Supply—Surface	
Treatment—Filtration and chlorination	
Plant capacity	37½ mgd
Average demand	11 mgd

Rates to Water Districts

All figures above are for users within city limits. Eugene serves an additional 27,000 outside-city users who belong to water districts. Each district receives water through a master meter and is charged as follows:

Meter Size (in inches)	*Allowance (in cu. ft.)*	*Minimum Charge*
2	3,200	$10.00
3	8,000	25.00
4	14,000	43.00
6	32,000	100.00
8	56,000	175.00
10	86,000	270.00

All above the allowance is charged at 9c per 100 cu. ft.

Remarks

1. City provides service lines to property only.
2. City pays the cost of new mains.
3. The Eugene Water and Electric Board does not operate sewer services, but it bills for them.
4. Billing is done on Burroughs Key Driven Equipment.
5. Water rates were increased approximately 30% in 1950. Water use was not affected. Further adjustment may be needed

KENNETH W. RINARD
Water Operations Superintendent
Eugene Water and Electric Board
Eugene, Oregon

FOR EMERGENCY LIGHT AND POWER

SIZES
700 Watts to 35 KW
115 V. AC, 12 V. DC

GESCOR power plants will deliver quick and dependable electricity at extremely low cost. These efficient units can be whisked to the scene of operation with minimum effort and put to work at a moment's notice.

Push-button start, fully shielded and filtered for radio, individually checked by scope. New Briggs-Stratton, Clinton and Wisconsin engines, fiber glass insulated generators, control boxes with voltmeter. Rugged construction, complete with carrying handles and base.

Time now to standardize on GESCOR plants for fire, police, CD, public works and waterfront use. CD matching funds can be applied. Immediate shipment.

700 watt (A712)	77 lbs.	$143.50
1500 watt (A1512	102 lbs.	275.50
3500 watt (A3512)	280 lbs.	375.50
12KW (G12018A)	1037 lbs.	1475.00
35kw (G35D)	2050 lbs.	4386.00

Air-cooled, Water-cooled and Diesel powered. F. O. B. Factory.

GENERAL ELECTRONIC SERVICE CORP.
378 Wilmot Ave., Burlington, Wisconsin

Traverse City Iron Works
Traverse City, Michigan

Manufacturers

Fire Hydrants and Valves

A.W.W.A. Specifications for Municipal and Industrial Work
Factory Mutual and Underwriters Approved for Automatic Sprinkler Installations.

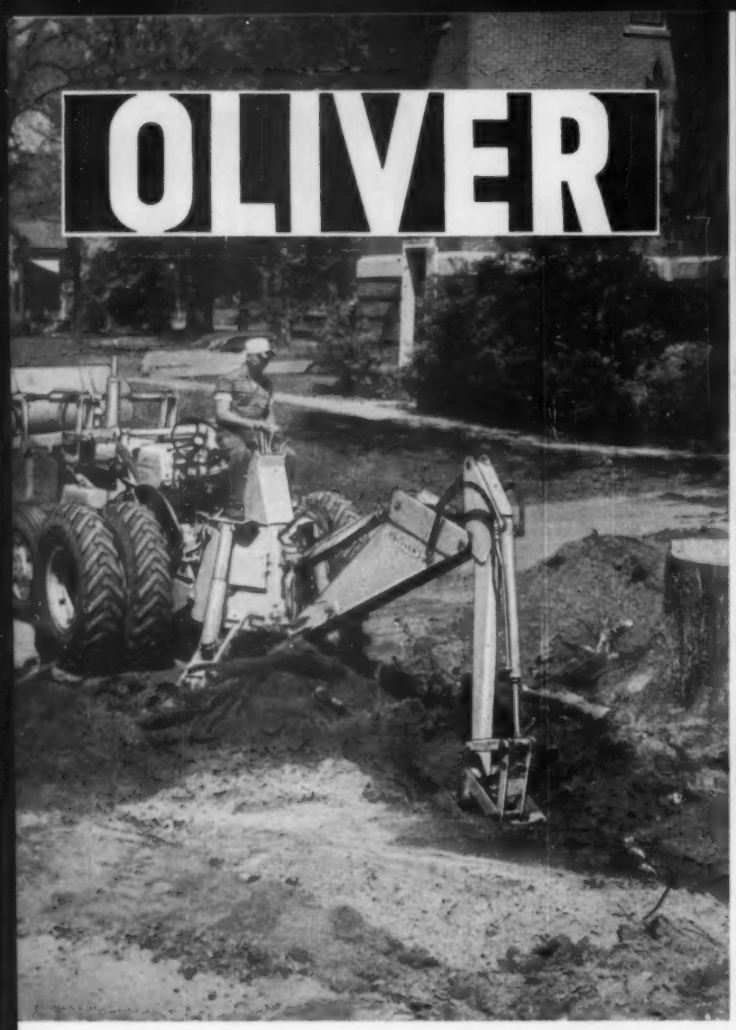
Mechanical Joint Fittings
Bell and Spigot Fittings
Flanged Fittings
Special Fittings
Fabricated Pipe for Pumping Station and Sewage Treatment Plants

national's PSYCON stops filter flies

National's safe, economical PSYCON will assure almost 100% kill of all the larvae and pupae as well as the adult filter fly. In destroying this health and sanitation menace in your city, PSYCON is guaranteed to be harmless to algae and bacteria and will not affect snails and B.O.D. It is no longer necessary to use dangerous bacteria-killing chlorination or expensive time-consuming water flooding. National's PSYCON will end your filter fly problem.

A PRODUCT OF NATIONAL RESEARCH

national
DISINFECTANT COMPANY
2417 Commerce, Dallas
906 S. Seventh, St. Louis



JUST SECONDS SEPARATE THESE PICTURES!

With dig-and-dump speed like this, figure the *extra* income that's yours from a rapid-cycling Oliver 770 tractor with No. 70 backhoe and 778 loader!

Whether you are grubbing out heavy-rooted stumps as here...doing production trenching...or handling 101 other backhoe jobs, you capitalize on more modern tractor design with highest engine and hydraulic power to get stepped-up job production.

Note the easy job *this* operator has of it—how all controls are conveniently in hand, *in his lap*. No time-wasting long reaches; operation is finger-tip simple, the *nontiring* Oliver way.

Oliver gives you three great new wheel tractor models —each a master for easy mobility, exceptionally wide work scope and *all* the advantages that put more job contracts into your pocket!

Job-Test These Olivers Now!

NEW OLIVER 550—an all-purpose, versatile, budget-priced tractor of high-income ability. Gas or diesel. 558 loader capacity is 12 cu. ft....works with all mounted equipment, 70 backhoe and 3-point hitch tools.

OLIVER 770—a top-speed performer in its popular-size class; today's biggest value. Mounts ¾-yd. loader; is available with "Reverse-O-Torc" instant, finger-tip reversing; backhoe buckets from 12″ to 36″. Gas or diesel.

OLIVER 880—the big-production, heavy-duty loader or backhoe. Loads ultrafast with 1-cu.-yd. loader and "Reverse-O-Torc" control. Backhoe gives you fast, deep digging just like the big rigs at a fraction of the price! Gas or diesel.

THE OLIVER CORPORATION
Industrial Division, 19300 Euclid Ave., Cleveland 17, Ohio
a complete line of industrial wheel and crawler tractors and matched allied equipment

T22-7

TELL ME MORE...give me full details on the Oliver model I have checked:

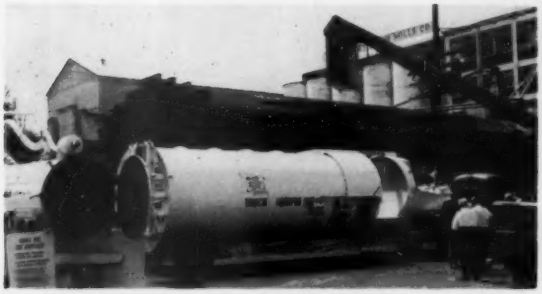
☐ Oliver 550 ☐ Oliver 770 ☐ Oliver 880

☐ I want a job demonstration, please.

Name..... *Position*.....

Address..... *City*..... *Zone*..... *State*.....

Discussing equipment are P. J. Magliato, Department of Sanitation, N. Y. C. and John Baffa, treasurer of the New York-New Jersey Metropolitan Chapter of the APWA.



Big 32-cubic-yard, route pickup packer-trailer combines low lifts for collection personnel with higher and fewer trips to disposal areas.

Three-stage, vacuum litter collector—wide mesh bag at hopper inlet catches papers, rags and light bulky materials, allowing coarse particles to drop into hopper.

Vacuum Litter Machine Stars in Show

Clifton, N. J. is host at New York-New Jersey Metropolitan APWA meeting: latest equipment and materials featured

Growth of the American Public Works Association was the theme and machines were the stars as record crowds saw demonstrations of almost a hundred individual pieces of equipment by more than 50 exhibitors in Clifton's new 26,000-square-foot municipal garage on May 20th. More than half an acre of unobstructed floor area in the big building held only a small part of the displays and equipment; most of them overflowed into an additional acre of paved area surrounding the 80-by-320-foot garage.

Just as every movie has its scene stealers, every equipment show must have its stars. Among the latest in tractors, sweepers, packer bodies, cranes, rodding machines and other equipment, was a jeep-mounted, vacuum-type litter collector that "played to a full house" during every hour of the one-day show. Exhibited by the Tarrant Manufacturing Company of Saratoga Springs, N. Y., the "City Slicker," mounted on a C.O.E. Jeep chassis, consists of a vacuum-type pick-up shoe connected to a hopper by a 10-inch-diameter flexible hose.

Inside the hopper, where the flexible hose joins the body, is a wide-mesh bag designed to catch and

Equipment everywhere you look—more than 50 exhibitors demonstrated 100 separate pieces during the one-day-long show.

Greenville, Miss. Cuts Costs . . . Improves Refuse Collection with DUMPMASTER

Officials, Merchants Enthusiastic Over New Type Service

After five months of operation, Greenville, Mississippi officials, merchants and sanitation department employees believe their DEMPSTER DUMPMASTER system is the answer to low-cost, sanitary refuse collection.

This prosperous, progressive city on the banks of the Mississippi River installed one truck-mounted Dumpmaster and 39 containers in sizes ranging from three through six cubic yards in February of 1959. Five months later, City Engineer John Teunisson who, together with a far-sighted city council instituted the installation, reports that the new system has exceeded his highest expectations for economy and efficiency.

Members of the Sanitation Department who have closely supervised operation of the new equipment are particularly pleased with the Dumpmaster's ability to handle big capacity containerized refuse, as well as hand-loaded residential pickup routes. It is pointed out that this flexibility enables them to keep the equipment busy, thereby saving the taxpayers money.

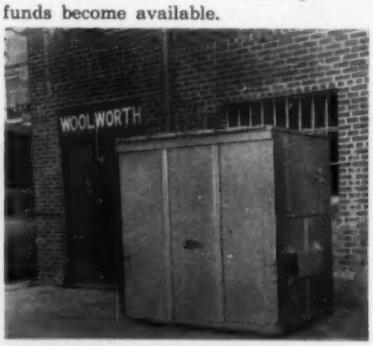
John Teunisson, veteran city official, likes Dumpmaster economy.

Dumpmaster picks up 6 cu. yd. container behind elementary school.

Schools and Downtown Areas Containerized Residential Routes Served By Dumpmaster

At present, schools and the downtown business district, where large volumes of refuse accumulate, are served by big capacity containers, with all 39 locations being given daily service. Additionally, several manual loading routes in residential areas are served by using the Dumpmaster as a conventional packer truck.

City Engineer Teunisson estimates that the school containers will pay for themselves in less than one year as a result of time savings with the new system. The Dumpmaster has made possible a $7,000 reduction in the Sanitation Department Budget. The size of these savings and opportunities for further improvement have led Greenville to set up a goal of over 100 containers as soon as expansion funds become available.



Typical installation behind a store in the downtown business district of Greenville.

Tax-Fee Plan Covers Expenses

Greenville's residential and school refuse collection is tax supported, but commercial refuse carries a charge to the merchant based on the time necessary to make a pickup with a conventional packer truck and its crew. The monthly charges are based on the number of pickups, times the number of minutes required, times $2.75 per minute. These proceeds are applied to pay for the container, the Dumpmaster and the operator's salary. Because of the high speed collection, the city saves enough over manual operation to offer free service to any merchant who purchases his own container.

Dumpmaster dumps huge load at the efficiently operated landfill.

DEMPSTER BROTHERS
Inc.
Knoxville 17, Tenn., Dept. AC-7

hold papers, rags and similar materials allowing the balance of the sweepings to enter the hopper. Coarse or heavy particles drop into the hopper under influence of reduced velocities, and the remainder of the air volume, carrying airborne fine particles, is passed through two cyclone-type collectors mounted on the rear of the truck. These collectors remove the fines and emit the cleaned air upward through the cyclone stacks.

Telescopic Crane

Also attracting large groups of observers, was a 100-foot telescopic crane manufactured by the Atlas Crane Co. of Mount Vernon, N. Y. and a 32-cubic-yard Lo Boye trailer packer designed for street pick-up and demonstrated by the Pak-Mor Manufacturing Company of San Antonio, Tex.

Representing the City of Clifton were William Holster, city manager, as meeting chairman, and Richard J. Lynch, Assistant City Engineer, who acted as moderator during an outstanding steak-sandwich luncheon that was sponsored by the Kerr Concrete Pipe Company of East Paterson, N. J., and catered by members of the Clifton Department of Public Works.

Following a panel discussion of the studying, planning and financing of musicipal garages, an analysis of the recently completed Clifton Garage was conducted by Arthur Mazowiecki, Department of Public Works. The big garage handles service, repair and maintenance of all municipal vehicles and equipment, regardless of department. No personnel are assigned to any one department, section or machine and work is set up according to a preset priority schedule, with emergency repairs tackled as they arise, without necessity for waiting for a special crew to clear the floor.

During the entire afternoon, members and their friends were transported by chartered buses to the Little Falls, N. J. treatment plant of the Passaic Valley Water Commission for a thorough tour of inspection of equipment and materials.

In the evening members enjoyed a banquet at the Friar Tuck Inn, Cedar Grove, New Jersey. Mayor Stanley Zwier of Clifton welcomed members and their guests, and APWA officers were introduced.

TWO PIECE

sliding or screw type cast iron valve boxes for covering 4" thru 10" valves for water or gas. Rugged construction for lifetime service. 5¼" shaft. Extensions as required.

Adjustable
VALVE BOXES
THREE PIECE

valve boxes supplied with separate bases are available in sliding or screw type. Made with 5¼" and 7" shafts with extensions as required. Complete line of service and roadway boxes.

ALABAMA PIPE CO.

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120 S. Michigan Ave. / 350 Fifth Avenue
Chicago, Illinois / New York 1, New York
General Sales Offices
ANNISTON, ALABAMA

APCO

PREVENT *PANIC!*
when lighting FAILS
be prepared with
Big Beam
AUTOMATIC
EMERGENCY LIGHTS

When your BIG BEAM Emergency Light is plugged in, you're safe. It lights automatically when lights fail. Gives hours of brilliant light.

Hand Lamps • Flares

Wide range of electric hand lamps and flares. Write for bulletin on BIG BEAM line.

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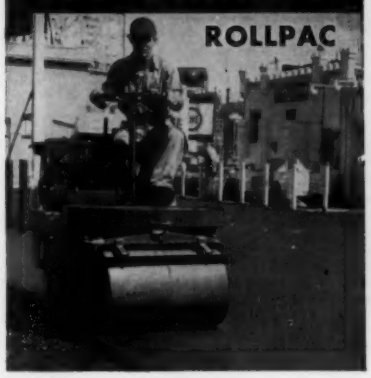
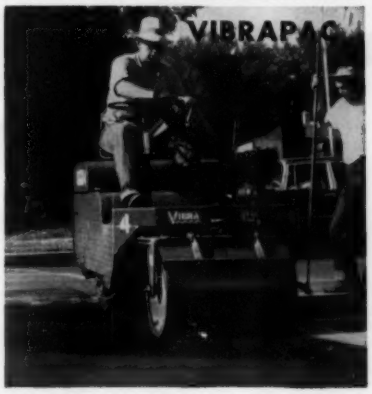
U-C-LITE MFG. CO. 1063 W. Hubbard St. Chicago 22, Illinois
Canada: Bernard Marks & Co., Ltd., 70 Claremont St., Toronto 3, Ont.

YOU CAN'T OUTGROW
A ROLCOR ROLLER
STATIC OR VIBRATORY



Whether your job is . . .
Crease rolling . . . Driveways . . . Parking lots . . . Patching . . . Tennis courts . . . Sod rolling . . . Maintenance . . . you won't outgrow the usefulness of a Rollpac.
That's why thousands of contractors, landscapers, institutions and others make Rollpac their "number one" unit. One week on *your* job will prove to you why Rollpac is the top selling one-ton roller in the United States.



Here's a two-ton vibratory roller that produces compaction to equal or exceed static rollers weighing eight tons! Vibrapac is 100% American designed and built specifically for asphalt and soil compaction—no corrugation of surfaces. A single lever clutch shifts from static to vibratory action. Works in close places.

Easy to transport with Rolcor Trailer.

WRITE FOR FULL INFORMATION AND LITERATURE

ROSCO MANUFACTURING CO.
ROLCOR DIVISION
3118 Snelling Ave. • Minneapolis 6, Minn.

OCT. 10, 1954: 6″ SNOW AND SLEET—CLEVELAND, OHIO
OCT. 28, 1951: 5″ WET SNOW—UPPER NEW ENGLAND
OCT. 25, 1955: FREEZING RAIN—CHICAGO AND DETROIT
OCT. 24, 1956: 3″ SNOW, FREEZING RAIN—SOUTH DAKOTA
OCT. 20, 1952: 4″ SNOW—WILKES-BARRE-SCRANTON, PENN.

(*Source: U. S. Weather Bureau Climatological Data*)

Prepare for early storms—
order STERLING ROCK SALT now

If you're caught without rock salt, early storms can paralyze traffic, cause serious accidents, mean heavy business losses. Don't let this happen to you! Stockpile your Sterling Rock Salt now and stockpile enough. (When treated with Storite, Sterling Rock Salt can be kept from caking even in outside storage.) Order *now* from your nearest International Salt Company sales office.

INTERNATIONAL SALT CO., INC., SCRANTON, PA.
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Wichita Fire Inspector Carl Jones talks to government class in Wichita's East High School. Officials have appeared as lecturers for seven years.

City Goverment Goes to School

. . . and wins long-time friends, gains better informed citizenry

By **MADISON F. WEST**
Public Information Officer
Wichita, Kans.

Public schools today are demonstrating a growing interest in local government. The opportunity never was greater for a city to tell its story. Wichita, Kans. (population 250,000) is responding to this interest of teachers, professors and students at intermediate, high school and college levels. It has good reason to.

Students form a non-voting block which makes up 25% of the city's population. In a half-dozen years, more than 15,000 of these young people will be casting ballots of their own. Even now, if classroom questions and discussions are indicators, they are helping to decide municipal election issues through influence at home on fathers and mothers.

A municipal official in a neighboring city met recently with a large number of his community's leaders, people whom he expected would be well informed. "I was shocked at their ignorance," he said. "Their knowledge of how their local government was run, and of its basic functions, was very poor."

By contrast, the questions below were asked by three high school students in Wichita:

"If the general property tax has become too high, what new sources of revenue are open to the city?"

"What is the cost of annexing a new subdivision?"

"What are the city's sources of income? How does it spend its money? How much are the current capital expenditures? What are the city's long-term financial needs?'

The students asked these questions in separate, individual interviews with key city staff people. And they came prepared, having read and made background notes. One, a quick, bright, dark-haired girl, had a sheaf of stories about local government which she had clipped from local newspapers over several months. She made rapid short hand notes for her report and for charts which she prepared for classroom use.

Wichita's response to this student interest takes three forms—publications, interviews and guest lectures, and visual reports.

The city has published a handbook on local government in cooperation with city public schools and the municipal university. It is used in high school and in college classes as a supplemental text. Intermediate schools stock copies as library references for ninth grade civics courses.

Administrative officers of key departments have encouraged student interviews. At one local high school for the past seven years, municipal staff members have appeared as guest lecturers before government classes.

Wichita produced its first visual annual report, a color slide film, in 1955. This has been welcomed in classrooms for use as an introduction to municipal government and its operation.

Use of the handbook, of interviews and lectures, and of the visual report has grown. Several local schools use one or more of these approaches to supplement instruction about local government. The next step, logically, is to design a supplemental curriculum program. It should be done to help schools teach local government, to stimulate student interest and future participation in local affairs, and to help

local government interpret complex problems to citizens.

The local government handbook is an excellent beginning place.

Wichita first published such a handbook in 1946. It was written to fill the void left by American government and civics texts. Statewide texts or handbooks were too general. The answer was to create a book on our own Wichita government, its organization and practices.

Numerous cities publish detailed booklets on local government. Frequently these are directories, and more often are operations reports. The Wichita handbook is neither. It is a local government text, directed to the students but equally useful to the adult citizen. Dr. Hugo Wall of the University of Wichita, well-known for his work with the International City Managers Association, Miss Julia Emery, a government teacher in the Wichita schools, and the writer produced the text.

The handbook deals, by section, with city and with county government, and with school administration. Briefer sections treat municipal university organization, elections, local courts, the history of the city, financing local government, and statistics of the local government units. Maps illustrate stages of the citys growth, the metropolitan planning district, and county political districts.

The text is illustrated. Line drawings of policemen, firemen, engineers, nurses, and of others in typical, functional tasks were used in organization charts. These also were spread through the text, adding interest and helping to interpret the jobs which local government does.

The handbook is 8½ by 11 inches, a notebook size. Ten thousand were printed, in two colors. Costs averaged slightly more than twenty cents each. The print order was split between the city and the schools, and the copies are sold to students (and to citizens) for twenty-five cents each.

Other publications also are useful to our student-citizen public. "Wichita Statistically Speaking" is a two-color flyer, a two-page summary of the current year's statistics: population, area, new building valuations, miles of paving, water consumption, etc., and a summary of department operating highlights for the year. The flyer summarized the visual annual report and cost only 3/5 cents each. "16 Cents a Day," which won the 1956-57 Government Public Relations Association publications award, was distributed to many high school and college government class groups.

Based upon interviews and inquiries from high school and college students, one fact is apparent. Cities should contribute basic local government publications to libraries in each high school and college. Current budgets and financial reports should be available in the schools. Planning, traffic and financial studies and surveys also are of interest to the student. A citizens' advisory committee report on local government financing in Wichita has stimulated a host of questions from high school students.

Police, Fire, Public Works, Planning and Administration and Finance Departments in Wichita frequently send practicing government officials to schools to talk to classes. And students come to city hall, on assignment or to find answers for semester papers. A frequent point of contact is our Information Office in Administration's Budget and Management Division. Special reference works or files are loaned on

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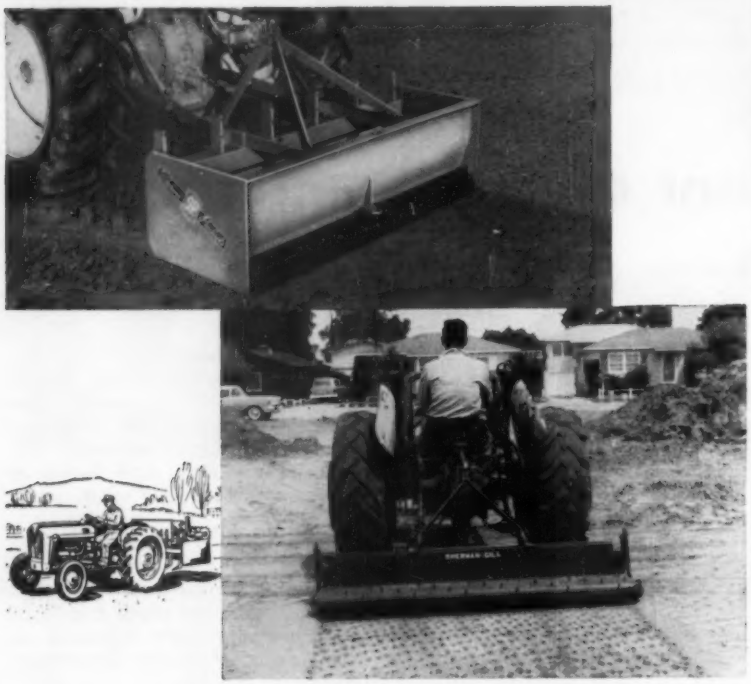

Two pieces of equipment instead of seven. Result: lower investment and a terrific saving in time of changing from one attachment to another. That's the capsule story of the new Sherman line of soilworking tools. The Sherman Landscraper and the Sherman-Gill Multi-Purpose Tool revolutionize landscaping.

The Sherman Landscraper does the rough grading. Then the Sherman-Gill scarifies, breaks clods, levels, finish grades, pulverizes, rolls and firms. And when you're finished, you just put the Landscraper on top of the Sherman-Gill and roll down the road to the next job.

The Sherman Landscraper and the Sherman-Gill are inexpensive, high productive landscaping tools. Ask for a demonstration today or write for Bulletin No. 1092.

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FITCHBURG CHIPPER

"OPERATES 1693 HOURS without a breakdown of any kind!"

WELDON S. CAMPBELL
64 MUNSON STREET
GREENFIELD, MASSACHUSETTS

February 4, 1959

Fitchburg Engineering Corporation
Fitchburg, Mass.
Mr. Perini, Superintendent

Dear Sir:

On March 23, 1955, we purchased one of your Chippers. You may be interested to know that this machine operated a total of 1,693 hours without a breakdown of any kind. Inasmuch as we are paid for running time only we often start up the chipper 20 or more times daily.

We have followed faithfully your instructions in using a hone on the knives each morning, we find that by doing this we can use the knives for five weeks before sharpening. Even then only about 12 thousands are needed to bring them back.

Contractors find your chipper is ideal and saves them much time and dollars in clearing a woodland area before bull dozing begins.

Your Engineering skill and knowhow has resulted in the finest of all Chippers and I have seen them all in operation.

Hauling time is reduced two-thirds, this results in a large saving in gasoline, parts and labor. I would never again be without one.

Respectfully,

Weldon S. Campbell
Tree Warden & Moth Supt.
Greenfield, Mass.

"Our Fitchburg Chipper has been inexpensive to maintain and trouble-free in operation, and has meant a great saving to us in time and labor."
—F. A. Canuso & Sons, Inc.
Philadelphia, Pennsylvania

"During about 2,000 operating hours we have suffered neither employee accident due to chipper operation, nor major mechanical failure."
—Northern Tree Company, Inc.
Petoskey, Michigan

"The Fitchburg Chipper is well constructed. The machine is trouble-free and easily maintained."
—John Glasgow, Supt. of P. W.
Township of Mahwah, New Jersey

Fitchburg Wood Chippers are engineered to stand hard use, to give long service without excessive maintenance costs.

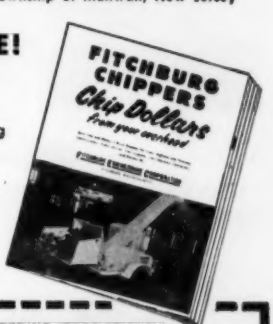
That's the "reason why" successful men like Weldon Campbell prefer Fitchburg for the tough brush removal jobs.

Fitchburg Chippers are designed by engineers for busy, trouble-free service. The exclusive spring-activated feed plate adjusts itself automatically—provides protection from damaging foreign material—assures smooth, efficient operation. The power take-off clutch gives safe starts and stops. There's no fly wheel to cause bearing trouble. These features keep a Fitchburg Chipper on the job . . . save you time and money.

Read (at right) what others say about their Fitchburg Wood Chippers, and send for your free copy of "Chip Dollars" today.

NEW! FREE!
Book of Facts

Detailed cutaway drawings of Fitchburg Chipper in color. Specifications, diagrams, charts, plus money-saving reports and experiences of others.



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"Our Burroughs Accounting Machine gives us iron-clad control of 60 departments and $3,000,000,"

says Joseph B. Heywood, Comptroller, City of Auburn, New York

"Talk about budget control! We get an *up-to-the-minute* accounting of our financial standing through our Burroughs system.

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some occasions. On others, the students interview heads of divisions or departments.

The visual report can hardly be surpassed as a method for introducing the student to local government.

Wichita has produced its fifth such visual annual report, "7 Keys to the City." Past titles include "City with Wings," "Year of the Citizen," and "Building Tomorrows."

The out-of-pocket costs for such reports are low. For $150 one may purchase the 35-mm camera, projector and screen needed to shoot the slides and show them.

One key to a successful production is good pictures of the city in action: firemen fighting a blaze; police using lie-detectors or lab equipment; public works construction. These subjects lie outside the experience of most citizens and students and lend themselves to visual presentation.

Estimated out-of-pocket costs for our annual production is $200. We shoot pictures the year around. The script or commentary outlines the organization and function of government. Emphasis, however, is upon operating problems, objectives, and accomplishments. It is our belief that only with an understanding of these can citizens effectively help to set constructive policies. (The Information Office has begun to plan a film strip on municipal organization and function and a "light touch" film for elementary students).

Further Step

There is a further step, beyond these three approaches, and one which Wichita plans to develop: an organized supplemental curriculum.

Education is the special field of the schools and there is no intent on the part of the city to assume the role. But through city government-teacher conferences, municipal officers can accomplish three things: (1) help the school train students more effectively for active, local citizenship; (2) help the student to understand local government, broadly and in some of its special problem areas; and (3) be better understood as they carry on the jobs assigned to municipal government by the people of the community.

Through this government-teacher conference program, it will be possible to learn what prepared materials — handbooks, mimeographed flyers, color slide reports or packs of charts would be most useful, and what library materials are most needed. Scheduling guest lecturers before combined government classes in each school saves time for speaker and class.

Experience here and elsewhere suggests this caution to municipalities which might try a similar program: deal in functions and facts. To general government education, and to traffic safety, fire prevention, and similar public service education, schools and their administrations are highly receptive. But schools—and particularly the elementary and secondary public schools—are not places for partisan political appeals, nor for grinding the axes of community issues.

Wichita's city manager, Frank H. Backstrom, sums up this challenge to cities:

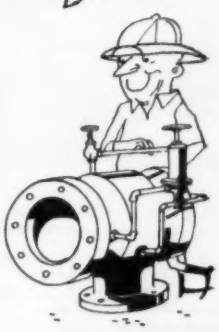
"Municipal government's aims are to help the youth know and understand city government. In stimulating this interest, we may overcome a large part of the voter apathy which faces so many of our cities today."

Wichita's handbook, visual reports and visiting lecturers are helping to accomplish these ends.

CUSHION THAT SURGE

G-A *Cushioned* Surge Relief Valve

A sudden surge of power can be disastrous, but such excessive pressure in your water lines is quickly relieved by the Golden-Anderson Surge Relief or Surge Arrestor Valve. The surge relief valve opens immediately when line pressure reaches pilot setting—the surge arrestor valve anticipates surge and opens on subnormal pressure to prevent surge.



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Florida Studies Its Traffic

In 1895 there were 4 motor vehicles in the United States, in 1955, there were 63 million.

This statement opens the 145-page report of the Florida Legislative Reference Bureau to the Florida Legislative Council Committee on Traffic. "The major problem in the preparation of the report," said Reference Director S. Sherman Weiss, "was one of selectivity, inasmuch as there is no dearth of information on the subject of highway safety."

More than 1,900 companies manufacture motor vehicles and automotive equipment; about 60 companies make tires and tubes; and at least 40,000 companies are engaged in petroleum producing, refining or blending. Automobile plants are located in 25 states; petroleum producers or refineries in 37 states; rubber manufacturers in 41 states; and suppliers of these industries have plants in all states.

Of the total 63 million motor vehicles registered in the United States in 1955 more than 10 million were buses or trucks. More than 7 million cars and trucks were on farms, or 12% of the registered vehicles.

Crowded Highways

Today's crowded streets and highways have resulted from tremendous increases in recent years in the number of vehicles, the number of drivers, and the number of miles of travel.

Another factor which contributes to the cause of accidents is defective roads, but driver-error is usually found in combination with roadway factors where the latter are deemed to have contributed to the cause of the accident. Obviously, holes in roads, curves, hills and wet pavement seldom cause an accident without the fault of the person driving a vehicle, because a driver should exercise caution.

Defects such as obstructions not lighted at nighttime and loose surface material, might be hidden so that a driver might not have reason to be aware of their existence, unless signs are posted warning the driver.

Light Conditions

The time of day is a definite factor contributing to the cause of accidents. Times such as dawn or dusk when the light is not that of ordinary daylight frequently make it difficult to distinguish objects at a distance, even though the driver uses the extra caution necessary. Night driving is much more dangerous than driving during daylight hours since the normal vision is restricted to the area encompassed by the headlights.

In Florida in 1955, two-thirds of all accidents occurred in the daytime, 29% during darkness. The fatal accident chart presents an entirely different picture. In the same year, the number of fatal accidents in the daylight hours was practically the same as the number occurring at night. The number of accidents occurring during darkness showed a steady decrease during the six-year period 1950-1955. Undoubtedly a decrease from 51% to 48% is due in part to the substantial improvements made in lighting systems on motor vehicles in recent years.

Since the beginning of the automotive industry it has been almost impossible for the states, in their traffic laws and even in their highway systems, to keep pace with the output of motor vehicles and their annual improvements. The need for uniform traffic legislation had its first formal recognition in 1924 when the Secretary of Commerce called the first National Conference on Street and Highway Safety. That conference appointed a Committee on Uniform Laws and Ordinances which, during 1925 and 1926, drafted the Uniform Vehicle Code. This code is reviewed periodically to keep abreast of changing needs, improved techniques, and advances in the design and construction of highways and vehicles. The adoption of the Uniform Vehicle Code by all states has been recommended by every Highway Safety Conference since 1946.

At the same time that the committee drafted the Uniform Vehicle Code in 1926, thought was given to the need for uniform municipal ordinances; and several years later the committee drafted the Model Traffic Ordinance, which is revised and kept up to date in the same manner as the code. Just as the national highway safety authorities urge the adoption of the Uniform Vehicle Code, they also urge the various states to use the Model Traffic Ordinance as a guide in preparing a state model traffic ordinance. The Florida Legislature in its 1957 Session enacted a number of the proposals recommended by the Legislative Council's Committee on Traffic and Highway Safety. Among these was a model traffic ordinance which municipalities may adopt by reference. This model ordinance was patterned after the Dade County Municipal Traffic Code. Dade County Dept. of Traffic and Transportation, 1358 N. W. 11th St., Miami, Florida.

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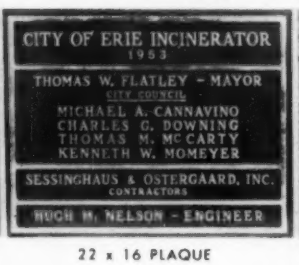

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FABRICATED OR CAST LETTERS

654 WEST 19TH STREET · BOX 59 · ERIE, PENNSYLVANIA U.S.A.

The Story of the Mayor's Muddle...

In common with many municipal officials, Mayor Smith is worried. Budget Director Brown has given him the bad news about soaring car fleet costs.

"Gentlemen of the Council," intoned the Mayor. "If we don't cut our fleet costs, we won't have enough money in the budget to feed these gas-thirsty monsters."

"We'll have to rebuild the municipal garage to house these overgrown cars. And that, of course, will take another big bite out of the taxpayer's dollar. Big cars sure have us in a muddle."

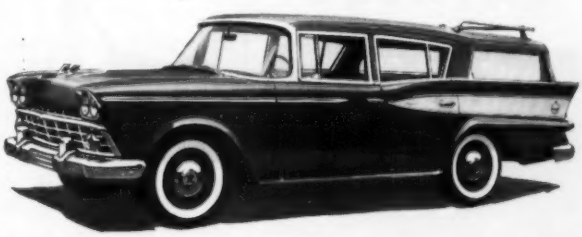
"But there is a solution. You'll see it right out this window. It's Rambler—the car that hasn't forgotten the fleet operator. Figures prove Rambler costs less to buy . . . less to operate.

"Because Rambler is compact, we can park more of them in the municipal garage without building an extension. And Rambler's top resale means we'll get more at replacement time."

Yes, Rambler helped solve Mayor Smith's muddle. With the city's Rambler fleet saving the taxpayer's dollar, His Honor has found that budget problems are not nearly as worrisome.

More and More City Governments find RAMBLER the answer to rising Car Fleet Costs

RAMBLER AMERICAN—America's lowest-priced 2-door Sedan is ideal for use by city employees whose duties require daily driving and frequent parking in congested districts . . . building and fire inspectors, truant officers, public health nurses, and others.



RAMBLER CROSS COUNTRY—the fastest growing station wagon in popularity—is the car for maximum flexibility . . . perfect for use by employees of Recreation Department—Board of Education—Parks and Boulevard Department—City Surveyors and Engineers. The Rambler 4-Door Sedan is a distinguished economy car for city officials.

For complete information on how RAMBLER can cut your Fleet Costs, see your Local RAMBLER DEALER or mail this coupon today!

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Please send your representative to call on us with complete information about the Rambler Fleet Plan. We understand this entails no obligation on our part.

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Big tool boxes hold full set of tools; fuel tank holds 8 hours' supply. Radiator shutters adjust to weather. Pneumatic tired retractable dolly is standard.

Jobs go smoother with a Jaeger Rotary

All users notice the difference. Jaeger's slower running speed (only 1700 rpm @ full load) consumes less fuel; better control holds pressure constant; air is 100° cooler than with old-type compressors; the machine is smoother, quieter, simple to operate, easy to move. Ask your Jaeger distributor to show you, or send for Catalog JCR8.

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Contains many features never before found in a pipe locator:

- Single turn solid metal loops cast into the fiberglas case
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Plus these other deluxe features:

- Transmitter and receiver each operate on 4 flashlight batteries—average life 1400 hrs.
- Battery tester on receiver and transmitter
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- Adjustable drop handle
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- Will locate valves and pipes at greater depth and will trace pipes farther

MOST POWERFUL PORTABLE PIPE LOCATOR MADE TODAY!

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Mt. Vernon Adopts City Employee Code of Ethics

Employees of Mt. Vernon, N. Y. now have a code of ethics to guide them. The code has been adopted as a local law by the City Council. Under its terms, employees are prohibited from:

- **performing any professional service for others for compensation that relates to any proceeding, petition or hearing before any city agency.**
- **representing any person, firm or corporation being sued by the city or filing a claim against, or prosecuting a legal action against the city.**
- **appearing for or representing any person or corporation in an action involving the prosecution of such person, firm or corporation for violation of any city ordinance or code.**
- **participating in or, as board members, passing upon any matter in which they have a direct or indirect financial interest.**

Employees violating these rules are subject to dismissal. In addition, the code also advises employees that they should not:

- **accept employment or engage in any business or activity which would induce them to disclose confidential information obtained by reason of city employment.**
- **disclose confidential information acquired during official duties to unauthorized persons or to use such information to further their personal interests.**
- **use or attempt to use their official positions to secure unwarranted privileges or exemptions for themselves or others.**
- **engage in any transaction as representatives or agents of the city with any concern in which they have a direct or indirect financial or other interest that might tend to conflict with the proper discharge of their official duties.**
- **give the impression that someone can improperly influence them, or that the performance of their work would be influenced by the rank, position, or family relationship of any party or person.**
- **make personal investments which they believe might be involved in decisions or rulings to be made by them.**
- **pursue any course of conduct which will raise or create public suspicion that they are apt to be engaged in acts that are in violation of their public trust.**

Help for the fall round-up

You don't need a gang of men with brooms and shovels rounding up stray leaves and debris when a "PAYLOADER" with Drott 4-in-1 bucket is on the job, and you don't have to close a street to traffic for clean-up either. The "PAYLOADER" can work close and parallel to the curb, while its clam-action bucket picks up sweeper piles cleanly and dumps them over the truck's tail gate.

Over 10,000 "PAYLOADER" units have gone into public service — more than all other rubber tire unit-design tractor-shovels combined. A big reason for this preference is the wide choice of attachments — many of them exclusive, that make "PAYLOADER" units more versatile — enable them to take the place of specialized machinery in many instances.

Whatever way you measure equipment value, you'll find that "PAYLOADER" — the specialist at *many* jobs — is still the No. 1 buy for public bodies.

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in water treatment, too... correct equipment does it better!

Golf, anyone? Or does the gentleman think he's playing tennis? Whatever the game, best results come from using the right equipment. • That goes for water treatment, too. Because no two water treatment problems are exactly alike, Dorr-Oliver offers a variety of equipment units and methods that provides maximum scope in designing to meet individual needs. The efficiency of this equipment is being demonstrated in thousands of modern plants throughout the world. Every day, over 8½ billion gallons of water are treated by Dorr-Oliver equipment. • If you would like more information on the complete line of Dorr-Oliver water treatment, write to Dorr-Oliver Incorporated, Stamford, Connecticut, for a copy of Bulletin 9141.

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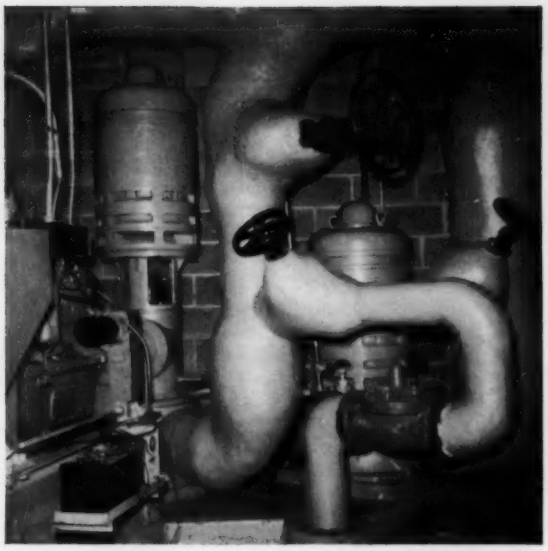
These two chlorinators, operating alternately, apply chlorine to the water in the caisson at a point near the pump suction screen.



The pump station now contains two electric-powered pumps with space provided for a third unit. One pump has a gasoline-engine standby unit.

A Water District by Popular Demand

Minimum payments guarantee financial success of District Operation

By **JOSEPH F. KOENEN**
Project Manager
DeLeuw, Cather & Co.
Engineers, Chicago, Ill.

A favorable referendum vote of 20 to 1 gave birth to the Lake County Public Water District. The public referendum was held in all of Lake County, Illinois except the cities of Waukegan, North Chicago, Lake Forest, Highwood, and Highland Park and the Great Lakes and Fort Sheridan military bases.

The Illinois statute under which the District was formed grants the District the authority to construct and operate water-supply and distribution facilities and to pay for these facilities by issuing water revenue bonds. Thus, the District entered into agreements to furnish Lake Michigan water to the City of Zion, the Village of Winthrop Harbor, and the Illinois Beach State Park at rates of 14 cents, 18 cents, and 20 cents per 1,000 gallons, respectively. Upon execution of these contracts, the District financed and constructed a Ranney Collector, pumping facilities, and about four miles of transmission mains with the issuance of $405,000 in 40-year revenue bonds.

The three customer contracts stipulate minimum annual payments for which a certain amount of water will be supplied as follows:

Locality	Annual Payment	Water Allowed (gallons)
Zion	$23,100	165,000,000
Winthrop Harbor	6,300	35,000,000
Illinois Beach Park	4,000	20,000,000

Water used in excess of that allowed is paid for at reduced rates.

The minimum annual income of $33,400 is sufficient to pay all maintenance and operating expense, interest, debt service, and provide for a renewal and replacement fund.

The Ranney Collector with an average design capacity of 2.0 mgd, was constructed on the shore of Lake Michigan in the Zion Beach Park. The well consists of a concrete caisson, 13 feet in diameter by 33 feet deep, and five perforated collector pipes. The three 12-inch-diameter collector pipes are 47, 76, and 104 feet in length and the two 8-inch-diameter collectors are 96 and 264 feet in length. They are jacked out of the caisson under the lake, oriented in a fan shape with about 30 degrees of angle between each pipe. Lake Michigan water infiltrates into the caisson through the collector pipes, is chlorinated and then pumped into the system.

A concrete slab on top of the well caisson supports the pumping station. The station houses two Fairbanks-Morse turbine pumps rated at 750 gpm against a 230-foot head with space provided for a third unit. A directly connected 60-hp electric motor drives one pump. The other pump is connected to a 60-hp electric motor and to an 80-hp Continental gasoline engine through a right-angle gear drive and a Hilliard twiflex clutch coupling. The gasoline engine starts automatically in the event of power failure and operates until power is restored.

Healy-Ruff "Roto-Trol" units control pump operation on an alternate basis and automatically bring the second pump on the line according to demand. Pump operation is controlled according to the pressure in the pumphouse discharge header. A

USED BY MEN WHO BUY EQUIPMENT FOR WHAT IT SAVES

The Vibrator that keeps costs calm

You don't have to get excited about costs when you use a Homelite High-Cycle Electric Concrete Vibrator. Only one man runs it, anywhere. Your labor costs less. And, there are more savings to gain. You need no special cradles or scaffolds. You set your Homelite Generator in any convenient spot within a 400′ radius, and your man goes to work. Homelite's High-Cycle Vibrator handles 30 to 40 cubic yards of 2" slump concrete per hour. Works in tight spots or deepest forms without damage to tough kink-proof handling hose. Rugged, high-cycle motor in vibrator head cuts maintenance. Carryable, 143 pound Homelite Generator saves in many ways. Runs one or two vibrators and also operates 110 V. AC-DC electric tools and floodlights. Write for full information, now.

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PUMPS • GENERATORS • BLOWERS • CHAIN SAWS

HOMELITE • A DIVISION OF TEXTRON INC., 107 RIVERDALE AVE., PORT CHESTER, N.Y.
In Canada — Terry Machinery Co., Ltd.

Williams-Hager check valve protects each pump and a Cla-Val bypass valve reduces starting surges on the transmission main.

Two Fischer and Porter chlorinators having a range of 30 to 400 pounds per 24 hours apply chlorine to the water in the caisson at a point near the pump suction. Presently only one chlorinator is used and the other serves as a standby.

A Fischer and Porter indicating-recording-totalizing flow meter using an orifice in the discharge header as the primary element provides a daily record of pumpage and automatic metering of the chlorine flow.

The pumping station is completely automatic; district superintendent Roy Chrismas checks the equipment in the morning and evening.

Distribution

Transmission mains run from the pumping station to the elevated storage tanks of Zion and Winthrop Harbor and to a point on the north side of Illinois Beach State Park. Interconnections to the existing distribution systems in the two towns were also made to improve pressures.

The mains consist of Johns-Manville Transite asbestos cement pipe designed for 150 psi working pressures as follows:

14 inch diameter — 6,225 feet
10 inch diameter — 9,570 feet
8 inch diameter — 7,250 feet

The elevated tanks float on the line using two-way Golden Anderson altitude valves. Sparling Mainline compound meters measure the amount of water delivered to the two towns and the park.

The four basic contracts amounted to $316,732 and were broken down as follows:

Ranney Collector Well	$ 89,250
Pumphouse	12,956
Pumping Equipment and Auxiliaries	39,153
Transmission Mains	175,373

Land acquisition, financing, legal and engineering fees and other expenses were paid out of the balance of the $405,000 bond issue.

Mr. LaVerne Dixon was chairman of the District through the construction period; Mr. William Schwager is the present chairman. Charles L. Whyte, Jr. is secretary and attorney, and Roy Chrismas is superintendent of the District. Ranney Method Water Supplies, Inc. designed and constructed the Ranney Collector. DeLeuw, Cather & Company, Engineers, of Chicago designed the project and supervised construction.

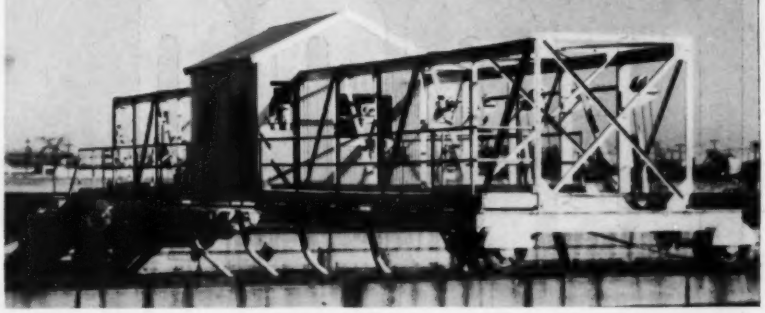
KOMLINE-SANDERSON

RECTANGU-LINE SLUDGE COLLECTORS

• No machinery or mechanical parts under water • Trouble free • Exceptionally low maintenance • Provides sludge scraping and skimming • Self-propelled traveling bridge type structure • Variable speeds attainable • No skewing or crabbing of machine on rails • No cables to pull units.

Another dependable piece of equipment added to the Komline-Sanderson line of quality equipment.

KOMLINE-SANDERSON ENGINEERING CORPORATION
PEAPACK, NEW JERSEY



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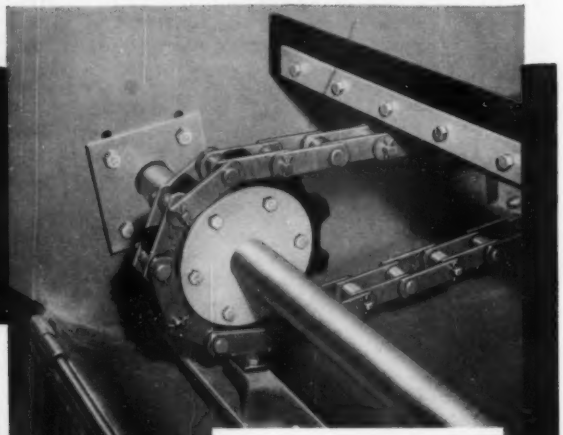
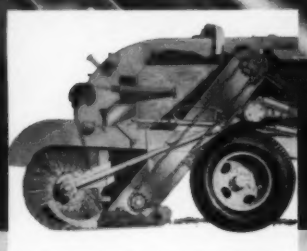
Eau Claire, Wis.—Phone TE 4-4164

Distribution of Filter Sands and underdrain Gravels to all States — and Territories of the U. S., Canada and Mexico

NEW MOBIL SWEEPER®
RUBBER SPROCKET DIRT ELEVATOR

GUARANTEED FOR 6000 MILES





MOBIL SWEEPER offers your community substantial new savings in sweeper operating and maintenance costs with a Dirt Elevator designed around Rubber Sprockets. They will last longer (guaranteed for 6000 miles)... will perform better... and will cost a mere 30% of the price of other types when replacement time eventually comes.

RUBBER SPROCKETS ease the strain on elevator chains... eliminate metal to metal wear and reduce abrasive action of sand and grit on chains and sprockets.

Available for older model Mobil Sweepers, too.... Foresight of Mobil Sweeper engineers has made this important improvement available in kit form for installation on older models. Contact your nearest Mobil Sweeper dealer for particulars.

If your community considers "After Purchase Costs" as well as initial purchase price it will pay to specify Mobil Sweeper on your next sweeper purchase.

Check Mobil Sweeper *advantages listed below:*

SAFEST SWEEPER BUILT

- Has 4-Wheel Brakes for Safe Operation
- Windshield and Cab Protect Driver from Trees, etc.
- Has 4-Wheel Stability — No Upsets
- Best Visibility for Sweeping and Maneuvering

MOBILITY AND MANEUVERABILITY

- Travels Fastest Between Yard and Work Areas
- Fast — Safe Travel To and From the Dump
- Maneuvers Easily Around Parked Cars and Short Turns

UNSURPASSED SWEEPING ABILITY

- Does a Cleaner Job in Less Time
- Long Rear Broom Draught Arms Sweep Dips Clean
- Variable Speed Brooms Operate Independent of Travel Speed

Write for Illustrated Brochure and Full Economy Record Today AC-7

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A St. Paul, Minn. journalist rides with the city's street -cleaning crew and tells the story of . . .

House Cleaning at Midnight

By GARETH HIEBERT

Gareth Hiebert is a columnist with warmth, sincerity and a flair for words. Lately he had his first book published. The title of the book is "St. Paul Is My Beat." He has delved into the history of St. Paul, has haunted every nook and cranny of our city. He has been down in our deepest sewers, been up into the girders of our highest bridges, has traveled with our snow plows, our flushers, our power sweepers, spent one-half day picking up garbage with one of our collectors and another half-day on a bulldozer at our landfill garbage disposal area. He roams the streets and alleys of our city day and night. He is proud of his city and proud of the people who live and work there. He has a firm conviction that everyone has a story to tell and he has the ability to make that story interesting to everyone else.

This article depicts the work of men whom most people never see, doing a job that most people take for granted. Few people realize the problems involved or appreciate the work which is done by the city street-cleaning crews, not only in St. Paul, but in all cities.

CLYDE A. TESTER
Supervisor of Street Cleaning
St. Paul, Minn.

All day the hot, southwest wind had been dirtying up the big carpet of the city with litter. People had done the rest. The carpet is a skein and pattern of streets and alleys in the Loop — paving, blacktop and blocks, running curb to curb instead of wall-to-wall. This is the city's big carpet. And its dirtiest.

At 1 a.m. Maurice Kimball and Jerry O'Brien, Ed Hennessy and Jerry O'Donnell brought their massive carpet sweepers down from the Dale Street garage, blue top lights bobbing out of the dark.

We rendezvoused at Seven Corners, in an all-night cafe, in a booth where, over coffee and toast, and still smelling of fresh shaving cream, we sat briefly and watched the wilted night workers and the soggy patrons from the nearby saloons bracing themselves with coffee and hamburgers before starting home.

When a woman, with long earrings, walked in with her husband, followed by a pinhead-sized pup, we got up and gave up the booth, walked out into the dust-laden night, to the big Elgin Street King sweepers, throbbing at the curbside.

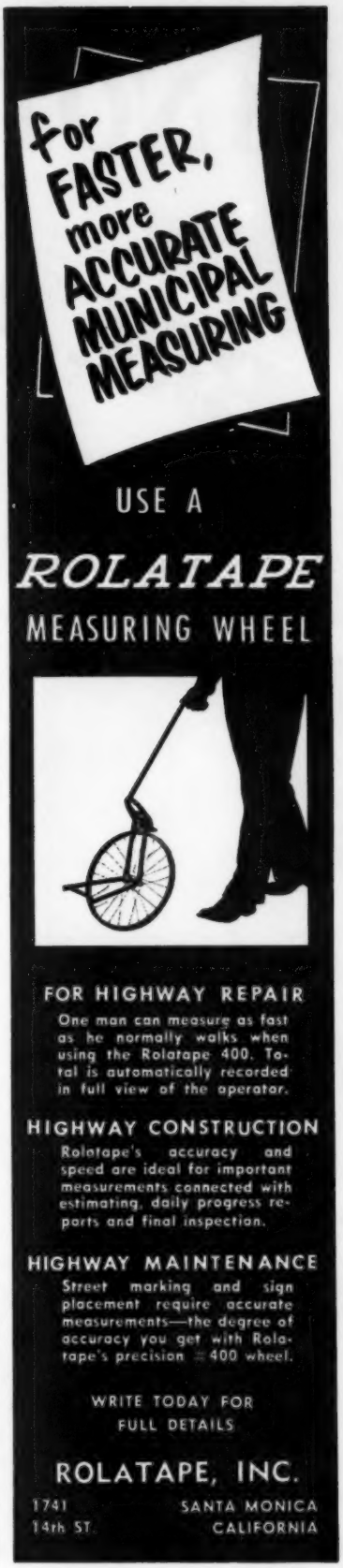
In the topsy-turvy day of the men who are the Loop's housekeepers, their day had just begun at 1 a.m. when the flow of traffic and cars parked at the curbs are the thinnest of the 24 hours.

"We'll clean the islands and pick up behind you," shouted Ed Hennessy to Maurice Kimball, who already had climbed into the high cab, whose interior is a cross between a diesel locomotive and the cockpit of a DC-7C.

"Motor on, belt on, sidebrushes on, water jet spray set." Maurice released the handbrake, let out the clutch and the big sweeper started lapping the dirt and debris, chewing and digesting it into a big hopper.

Jerry O'Brien, father of eight, perched on the front, watching for metal pieces, boxes—and now and then paper money, letters, documents. And amusing himself sometimes by chasing rats with his flashlight when the night rodents dart out of storm sewers, fleeing madly in the vanguard of the sweeper's roar.

Handling the Street King is tricky business. Looks easy to the passer-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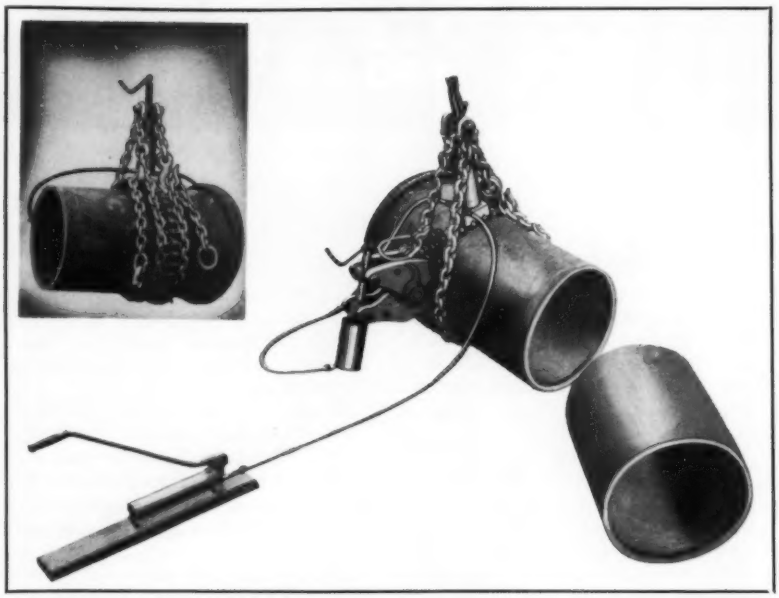
ANOTHER BREAK-THROUGH

BY THE WHEELER CUTTER

WITH THE NEWLY DEVELOPED AUXILIARY RAM UNIT, THE WHEELER HYDRAULIC MODEL WILL NOW CUT CAST IRON WATER MAIN THROUGH 18" DIAMETER.

The Wheeler hydraulic is truly portable. One man can operate the cutter and auxiliary ram assembly. Just minimum clearance necessary . . . all you need is space to slip the chains under the pipe. The same cutting wheels are used for every size pipe in the cutter's range and for all materials.

A section of 10" XH pipe line removed quickly and easily by the Wheeler hydraulic.



The new auxiliary ram assembly in place on 16" cast iron water main. Insert shows alloy chain assembly from other side.

The standard Wheeler hydraulic model will cut the following: (Water main sizes larger than 12" require the auxiliary ram)

- Class 150 AWWA water main 4" thru 18"
- Std. or XH soil pipe 6" thru 18"
- Class 250 AWWA water main 4" thru 18"
- Asbestos cement pressure pipe 6" thru 14"
- Cement lined cast iron water main 4" thru 18"
- Tile or terra cotta pipe 6" thru 36"

The auxiliary ram assembly offers you the familiar Wheeler speed and convenience features. Large diameter pipe is cut with just a few strokes of the pump after the unit is in place.

THE WHEELER MFG. CORP. BOX 688 ASHTABULA, OHIO

by. But steering is much like guiding a ship. The rear pivot wheel pilots the big machine and swinging the heavy steering wheel strains arm muscles until, after a night at it, your arms feel as if they were dangling from your shoulders.

When Maury swings the machine around in the middle of a street, the sensation is like riding in a tilt-a-whirl at an amusement park.

Key to sweeping the Loop is maneuvering the sweeper just near enough to the curbing so the big, whirring steel brush ends flick the curb. Like trying to pick up a pin with boxing gloves.

Maury headed his machine along Kellogg Blvd., eyes spearing the gutter, watching the brush—not too close, not too far—look out for that parked car ahead, swing around it and swing back into the curb. He handles the machine like a kiddy-car, but when I tried it later, I cut a zig-zag path that nearly harvested six parking meters on Jackson Street.

There's a wonderful sense of accomplishment as Maury churns down Kellogg, across Robert and rumbles down the long hill past the Post Office. Ahead dirt, wrappers, paper bags, envelopes loom in the headlights' glare. Behind is a clean trail, marked by the wet streak of the water jet that keeps down dust.

Pre-dawn View

The city, seen from a street sweeper in the pre-dawn, is a silent, dim, line of buildings, spaced by shadows and mysterious niches. Empty of pedestrians, hissing tires, clashing gears, it is like a set on a darkened stage. You clean the carpet in wide circles, working around the edges and gradually moving in toward the core. Lowertown, along Wacouta, Sibley, Jackson, past the Bethel Hotel, whose light still shines a welcome. Upstairs in one of the old rooming houses along Broadway you catch the gleam of a bare ceiling light, shining through a dirty window. In the gloom of a porch on Ninth a couple saying good-night, their figures silhouetted by the hall light, with an old wooden staircase in the background. A drunk, with a cloth wound around his head, leans against a lamp post. In the distance a police car siren echoes between the rows of buildings on the narrow Lowertown streets.

You see here the age of the city in stark realism, unkempt, shorn of daytime's cosmetics, the rouge of sunlight. Just dark and antique-

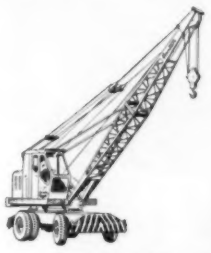
NEW BANTAM T-350

11-ton capacity—11-attachment versatility! A real "BUDGET-SAVER"

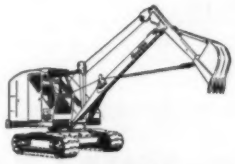
This all-new, carrier mounted BANTAM T-350 is the biggest value for budget-pinched municipalities you've ever seen! It's the most practical tool for handling vital jobs all over town: sewer and water line extensions and repairs, drainage ditches, culvert work, street and alley repairs, sanitary landfill projects. It's also tops for excavating work of all kinds, materials-handling in city yards or speeding municipal building projects.

The all-new BANTAM T-350, equipped with the new, long BANTAM back hoe, shown above, is a model of high-production efficiency . . . digs to 17'7". Its extra fast swing and line speed . . . foolproof and *weatherproof* mechanical controls . . . greater mobility with capacity to 11 tons and increased operating ease . . . make it the outstanding hoe in the industry.

Put the BANTAM T-350 to work for your city. You'll find it your most versatile tool—a money-saver that works with 11 different attachments, all BANTAM-built for matched-design efficiency. Call your nearest BANTAM distributor for a free demonstration on the job you name!



BANTAM CR-350
11-ton capacity; self-propelled; 1-man, 1-engine operated.



BANTAM C-350
7- or 8-ton capacity, crawler mounted.

THESE BANTAM-BUILT ATTACHMENTS GIVE YOU HIGH PRODUCTION, TRUE JOB VERSATILITY

Back Hoe . . . 100' of 5' ditch per hour
Shovel . . . load out 115 yds. per hour
Dragline . . . 115 yds. per hour
Concrete Bucket . . . high-speed concrete placement with BANTAM's own ½-yd. concrete bucket
Clamshell . . . up to 80 yds. per hour from stockpile
Crane . . . up to 70', jibs to 15' . . . lifts to 11 tons

SCHIELD Bantam Co.

Schield Bantam Co. AC-240
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I want information on BANTAM T-350 for municipal work—also details on: ☐ BANTAM CR-350, ☐ BANTAM C-350.

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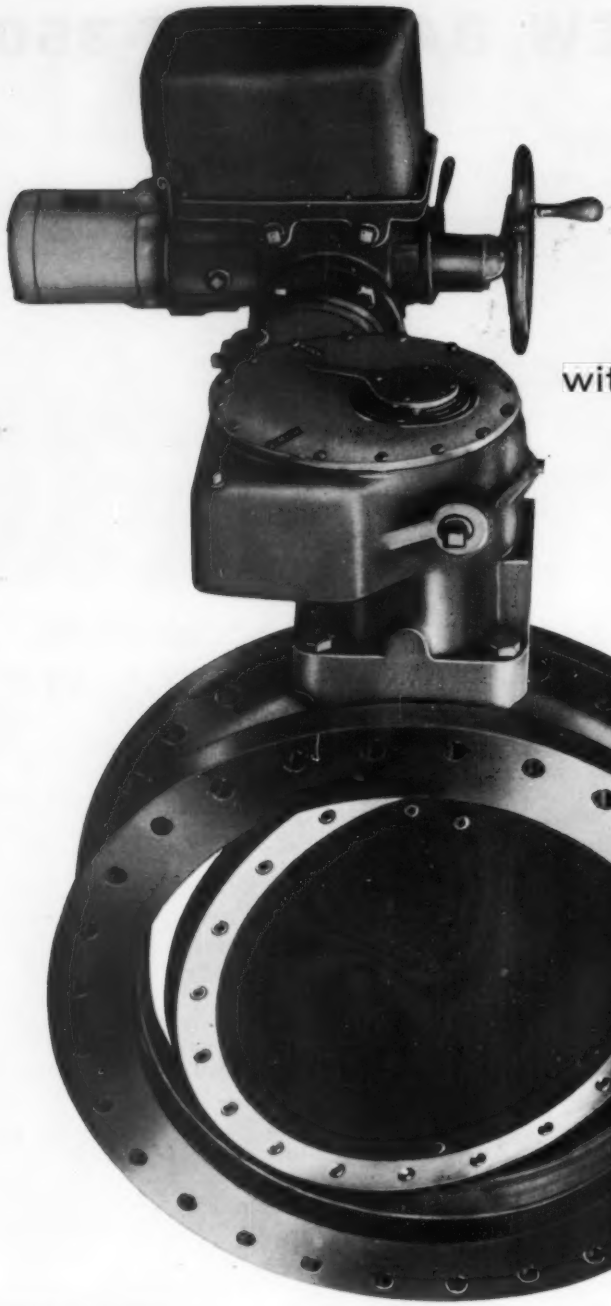
WORLD'S LARGEST PRODUCER OF TRUCK CRANE-EXCAVATORS



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DARLING VALVES

Manufactured in Canada by The Canada Valve & Hydrant Co., Ltd., Brantford, Ont.

DARLING-PELTON butterfly valves are new in both principle and performance. They offer you new advantages!

For example, a continuous and adjustable rubber seating ring provides full 360° sealing. The disc itself swings on an axis eccentric to the centerline of the valve.

This principle not only makes surer, drop-tight shutoff possible, but also eliminates shaft sealing problems, permits easy rubber seat replacement or adjustment without removing shaft or operator, and requires less operating torque.

Get all the facts on this forward step in butterfly valve performance. Made to A.W.W.A. Specifications. Ask for Bulletin SLS-5708.

DARLING VALVE & MANUFACTURING CO.
Williamsport 10, Pa.

looking. Like a wrinkled old woman.

Maury moves back toward Robert and a Dempster - Dumpster truck picks up the first rubbish hopper, filled with tons of litter, and deposits another, which Maury picks up in a slick movement of the sweeper.

We sweep past the shops on Wabasha, St. Peter. Brushing in shattered glass from bottles tossed by gleeful motorists, who wouldn't think of messing up their own living room rugs at home. And yet, in a sense, these carpetways in the Loop are also their "living room" rugs.

Slowly, morning gray washed out the black of night. A bird was singing from the top of the Moore Building as Maury and Ed Hennessy took their vacuum cleaners home. A neat, clean carpet waited the onslaught of the litterbugs.

Housing Codes Check Urban Blight

Six times as many U. S. cities have housing codes in force now than four years ago, the National Association of Housing and Redevelopment Officials says, noting recent emphasis on slum prevention by municipalities.

At least 260 cities now have laws setting minimum requirements for safety and health in housing, compared to 44 cities four years ago. (There are about 1500 cities in all over 10,000 population).

Many codes have run into lengthy opposition, first in the city council, then in the courts. Little Rock, for example, just passed a code that began with a study five years ago, was picked up by several study and advisory groups, debated in public hearings, defeated by the council in 1957, watered down, and finally passed this spring.

Baltimore, Milwaukee, and Fall River, Massachusetts have had to defend their codes in the courts recently.

On the other hand, residents in a Cincinnati neighborhood begged the city to get tough with housing code enforcement in its own area—and the city council complied.

The federal government, which has subsidized extensive wrecking and rebuilding operations in New York City, is insisting that the city tighten its code enforcement because housing is deteriorating faster than the city and federal governments can clear it, the NAHRO report indicates.

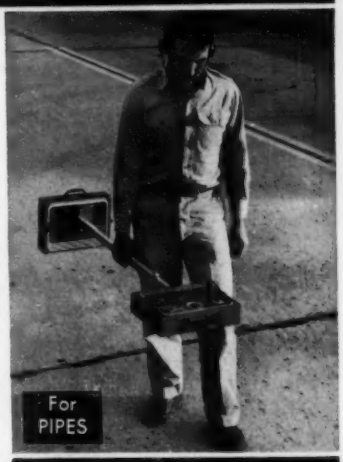
GOLDAK TRANSISTORIZED LOCATORS

Pipe Locator-Leak Detector

"Dualtronic"

Model LC-5T

The new "Dualtronic" combines the finest transistorized Pipe Locator ever developed with a high-gain Leak Detector to produce an effective and useful multi-purpose instrument. Designed specifically for Municipalities and Water Companies, the LC-5T assures pin-point detection of pipes, cables, mains and laterals and becomes a sensitive detector for water leaks simply by plugging in a crystal, rubber-encased microphone. Additionally, by a simple manipulation the new "Dualtronic" will pin-point valves, risers, boxes, and manhole covers. Now with transistors the versatile LC-5T is lighter, more sensitive, easier to operate, and it requires only flashlight batteries . . . Write today for further details on the "Dualtronic" and other Utility detection instruments.



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Leading Electronic Manufacturers
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WORLD'S FINEST DETECTION EQUIPMENT MANUFACTURERS SINCE 1933

Specify OBECO

COLLECTS LEAVES 4 TIMES FASTER . . .
CLEANS CATCH BASINS 4-12 TIMES FASTER

OBECO designed these units with you . . . MR. DIRECTOR OF PUBLIC WORKS . . . in mind. MODEL TWIN-50 SPECIAL has 33⅓ **greater** capacity . . . 16 yards instead of 12 yards . . . and is **self-dumping!** It vacuums an 8-FOOT swath instead of 12 or 24 inches. On leaf collection alone, this unit has amortized its entire cost (including truck) within 4 years from savings in **labor costs** . . . **and,** worked the **rest** of the year on catch basins. It is the largest vacuum leaf collector, street and catch basin cleaner built . . . but OBECO makes 5 models, a size to fit every municipality. Competitively priced, these OBECO workhorses are kind to your budget and flattering to your efficiency records.

OBECO

OMAHA BODY & EQUIPMENT COMPANY
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Some territories available . . . Distributor inquiries invited.

TARCO SPREADERS

the "Big Scottie"

The "Big Scottie" is a **special body-type chemical spreader** . . . designed for the correct, money-saving application of granular or pelleted chemicals for ice and snow control. Using its **exclusive Air-Blast spreading assembly**, a perfect ring-free, streak-free, "bird-shot" melting pattern is obtained. The "Big Scottie's" **5 cubic yard** load covers 27 miles of pavement (400 lbs. per mile up to 30 feet wide). **None of the salt touches whirling blades or discs** . . . and there is no material crushing or breakage.

Material is **conveyed** to the stainless steel spreading assembly at accurate pre-determined rates. Each unit is equipped with a detailed application rate chart so the operator can quickly select the correct feed and driving speed to fit any particular storm.

Your choice of either gasoline engine or P. T. O. hydraulic power is available. Spreader operation is **cab controlled** by means of one simple and quickly made adjustment. The "Big Scottie" is designed for mounting in the body of a standard dump truck or right on the truck chassis . . . either mounting is accomplished quickly and easily. The "Big Scottie" accommodates all the usual attachments such as hinged top screens, steel safety bumper, catwalk, ladder, fenders and flaps, flasher lights and spinner assembly for abrasives. Because it's designed for the special emergency work for applying de-icing salts in minimum quantities, the **"Big Scottie" quickly pays its initial cost in material savings alone.**

See your nearest Tarco Dealer or write us for more complete details about the "Big Scottie" . . . **another Tarco Spreader "that saves as it salts".**

the "Scotchman"

The **original stainless steel chemical spreader** using the unique and **exclusive Air-Blast principle** for the correct and economical application of straight de-icing salts.

Spreads bagged or bulk material. **Cartridge-type**, electric starting **power unit** . . . completely protected and operating in filtered air. All desirable controls: Width of Spread, Direction of Spread and Density of Material Application—all made instantly and easily. (Cab controls optional).

The "Scotchman" more than saves its cost the first season plus giving you faster and safer ice and snow control. Your Tarco Dealer will give you a free demonstration . . . or write us.

the "Arcrite"

The "Arcrite" is the spreader you've been looking for . . . **a tough, rugged spreader** that does a job; that you don't have to baby; that will stand rough abuse. The "Arcrite" is a man's spreader . . . not a light weight toy.

Here are just a few of the "Arcrite's" unique features: (1) sturdy backgeared gasoline engine designed for easy **"no load" starting**, (2) special **heavy duty** right angle **gear drive**, (3) **stainless steel** spreading **disc**, (4) **special adjustable hanger frame** fits snug to tail-gate without use of material chute, (5) rugged, all welded box-like frame.

TARRANT MFG. CO.

23 Jumel Place, Saratoga Springs, N. Y.

Downtown Trees Planted In Concrete Containers

Downtown Oakland, Calif. is receiving a new touch of beauty from 40 Maytenus boaria trees set in concrete planter tubs in and around a parking lot by the Park Commission.

Combining practicality and economy with parklike charm, the plantings represent a completely novel approach to a problem that has long vexed city planners. Instead of having to dig into the ground—usually through sidewalks or other pavement—the Park Department's new tubs make it possible to put the trees above ground level. The durable, movable containers are structurally attractive and cost only a small fraction of what is spent in other cities to achieve less pleasing results. Unsightly safety and protective features such as iron gratings are made unnecessary.

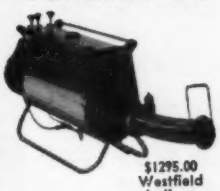
"We are completely freed from the ground by this approach," said Raymond H. Miller, chairman of the Oakland Park Commission. "It means that we can even place our trees on store sidewalks above basements, if we so desire. There is no limit to the possible variations in design and layout. And if we decide to change all the plantings at some time in the future, the tubs will still be as usable as they are today."

The tubs cost just half the price of redwood boxes used for this purpose in the past. The boxes last only about ten years whereas the tubs should last indefinitely. Each of the tubs is three feet in inside diameter and weighs 625 pounds.

The American Pipe and Construction Company, Hayward, Calif. uses

Willow-like Maytenus boaria trees set in concrete planter tubs by the Park Commission are attractive additions to downtown parking lot in Oakland, Calif.

No. 1 Choice
for EFFECTIVE INSECT CONTROL
Dyna-Fog* Sr.
TRADE-MARK
INSECTICIDAL FOG GENERATOR



$1295.00
Westfield
Indiana

Now—Dyna-Fog Sr. has (1) adjustable fuel consumption, (2) instantaneous formulation flow reading in gallons per hour, (3) exact gauge-dial for determining proper machine operation. All of these new improvements are offered in the Dyna-Fog Sr. with no increase in cost. Dyna-Fog Sr. is Air Force approved and is used by U. S. Army, Navy and Marine Corps bases. Dyna-Fog Sr. is used by Mosquito Control Districts, City Health Departments, Contract Foggers, Pest Control Operators and numerous governmental and industrial groups. Dyna-Fog Sr. can do the job better for you. Write for more complete information.

Makers of Dyna-Fog Jr., a 19 lb. unit for specific fogging jobs. 90 Day Warranty.

Curtis AUTOMOTIVE DEVICES, INC.
Dyna Products Division
P. O. BOX 297-B WESTFIELD, INDIANA

NOW!
a NEW solid-color PVC
POLY-CONE*
tough, durable, no seams, will not CRACK, TEAR or BREAK!

This new SAFE-T-CONE never needs repainting. Just wash it with soap or solvents. Made of polyvinyl-chloride to produce the toughest, *most durable cone on the market.* Outlasts ordinary cone many times . . . . without upkeep!

**Polyvinyl-chloride*

2191
SAFE-T-CONE®
TRAFFIC GUIDES

All-Rubber SAFE-T-CONES available in 3 SIZES!

Painted or Reflectorized
ALL RUBBER
Regular all-rubber SAFE-T-CONES, now better than ever. Painted standard red and yellow or reflectorized.

Plastic or All-Rubber
FLUORESCENT
New Poly-Cones and All-Rubber cones available in brilliant orange-red fluorescent for extra brilliance, day or night.

SAFE-T-CONES made only by Radiator Specialty Co.
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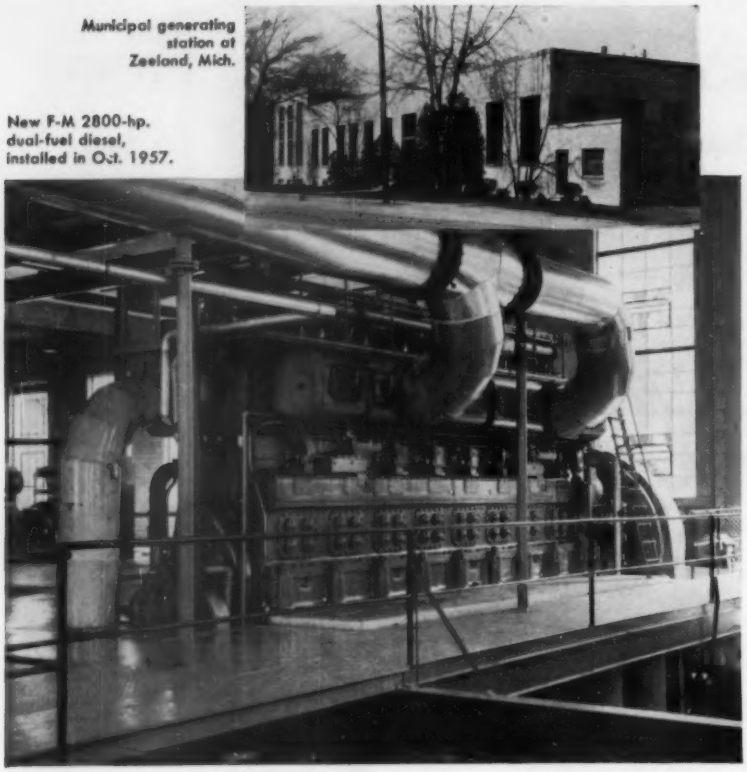

Municipal generating station at Zeeland, Mich.

New F-M 2800-hp. dual-fuel diesel, installed in Oct. 1957.

Even with poor load factors

new F-M dual-fuel diesel cuts fuel costs 21% for Zeeland plant!

From July through October 1958, this 2800-hp. Fairbanks-Morse dual-fuel diesel produced 71 percent of the 4,502,000 kw. hr. generated at the Zeeland, Michigan municipal plant.

The big Model 31AD18 engine averaged 5.74 mills per kw. hr. for this period—bringing average fuel cost for the plant down to 6.52 mills from an average 8.24 the previous year, a 21 percent reduction in fuel costs! The figures are even more impressive when it is realized the F-M diesel was operating at poor load factors, often well below 50 percent. Despite this disadvantage, F-M dual-fuel design made the operation profitable—even with gas costing 45¢ a thousand cubic feet and pilot oil 12.5¢.

Outstanding economy and dependable performance of six Fairbanks-Morse diesels in the plant are paramount in Zeeland keeping residential rates among the lowest in Michigan—averaging 2.3¢ a kw. hr. for the last fiscal year. For information, write Fairbanks, Morse & Co., 600 South Michigan Avenue, Chicago 5, Illinois.

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mass-production techniques in the manufacture of these tubs. Among contemplated future developments is use of a pebble mosaic design set in colored concrete.

In the pilot project the tubs have been left uncolored. But as the idea spreads through other business areas, the Park Department plans to introduce attractive color schemes to vary the dimensions of the tubs in order to make the tubs useful as momentary resting places for weary passersby.

The Park Department plans to plant Golden Gleam nasturtiums in the earth around the trees for color, and Confederate jasmine, a trailing vine, for fragrance.

Stability

Each tree is given stability in its tub by anchoring it to a post stapled to a one-half inch steel bar. Reaching across the diameter of the tub, this bar is welded to steel nails shot by a gun into the side of the container near its top. In this process, the velocity of the projectile prevents shattering of the concrete.

The post is placed in the center of the tub, extending to the bottom, where it is toe-nailed to a one-by-6-inch board for vertical support. When needed, further stability can be gained by welding a half-length bar at right angles to the original bar, with a terminal weld anchoring it to another steel nail.

These methods enabled the Park Department to install all 40 trees in less than a day. The planting program was coordinated by Assistant Park Superintendent Lynn M. F. Harriss. Landscape Architect Amedee M. Sourdry designed the layout; tree division experts, headed by Forester Eugene S. Cox, handled the planting, and equipment and construction division crews under George Kaher and Carl Ester accomplished the unloading and placing of the heavy containers.

The cost of installation of the trees was paid by the Downtown Merchants Parking Association. Prices range from $25 to $30 installed, depending on the size of the tree.

Ten of the willow-like trees are used to mark the parking lot's aisles and entrances, and the remaining 30 outline its borders. Maytenus boaria has the vigor to withstand the rigors of a downtown existence; the department expects that these specimens, now eight feet high, will eventually grow to a height of about 15 feet.

Routine daily maintenance of the trees will be the responsibility of the association members. The Park Department will provide such seasonal services as spraying, pruning, and fertilizing.

"Moonlighting" Is Common Among City Employees

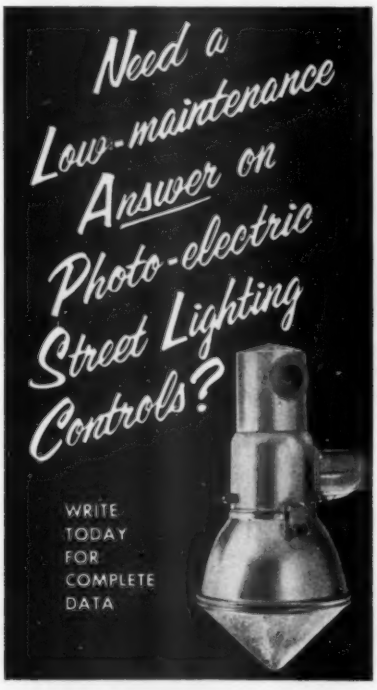
Moonlighting — the practice of municipal employees working in other occupations outside their regular duty hours—seems common in most communities, according to a study made by The Institute of Local Government, University of Pittsburgh. Police officers frequently obtain work outside the municipal government during their off hours. The Institute recently made a brief telephone survey of a dozen municipalities in Allegheny County and found that the practice of moonlighting is generally accepted, sometimes ignored, and even on occasion condoned. None of the municipalities contacted forbid the practice absolutely either by ordinance or by any sort of administrative regulation.

Small Salaries

The usual reason behind the practice is the small salaries paid by many communities. Several officials said that police officers do not receive the kind of wages that provide a good living in these days of high costs, and that the city should not stand in the way of a man who earned outside income. One comment expressed was that the only time the community should concern itself with a man's off time occupation was when there was an obvious incompatibility between the type of work done in the off-hours and the municipal duties required of the employee.

Some officials opposed the practice, however, because they felt it interfered with a man's efficiency in his municipal job. In the case of police officers, they pointed out, moonlighting made it difficult to contact men needed in case of emergencies. Also mentioned was the fact that a man who implemented his municipal income with other work cast a poor light on public service.

In New Jersey, members of a police department contested an ordinance which forbade outside employment on the basis that it was arbitrary, unjust, oppressive and unreasonable. The New Jersey court rejected this argument and said that it was necessary for the proper functioning of a police department that outside employment be prohibited if the government body thought that such employment interfered with police duties.



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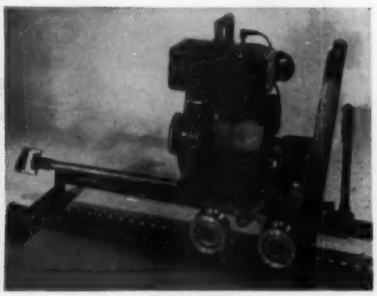

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- BORES—up to six inches diameter
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- BORES—1,000 feet on 1 Gal. of gas
- REAMS—up to 12 inches diameter

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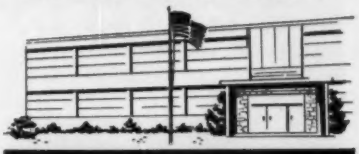

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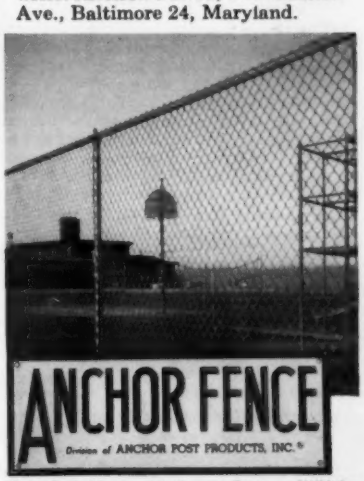
Every Anchor Fence is backed by a 67 year reputation as the fence that gives you maximum protection at low initial cost and virtually no annual upkeep. Call your local Anchor office for a free estimate, or write: ANCHOR FENCE, 6907 Eastern Ave., Baltimore 24, Maryland.



Plants in: Baltimore, Md.; Houston, Texas; and Whittier, Cal. Sold direct from factory branches and warehouses in principal cities.

purposes in the business area. This

Colonial Style Parking Lot

By E. G. HEATWOLE
City Manager
Alexandria, Va.

Practical municipal services can, and definitely should, reflect the culture, spirit, and history of a community without involving ostentation and bric-a-brac. Our new parking lot illustrates what we mean.

Alexandria is a colonial city, the home of George Washington and Robert E. Lee. We respect and honor this heritage but do not expect it to interfere with the service that a city must perform under today's conditions. We are sure that neither Washington nor Lee would want reverence to them to become a community handicap.

To provide the service associated with active business districts requires parking lots in downtown residential areas adjoining the business district. With the aid of the Old Town Civic Association, the city established certain standards in keeping with our colonial background and incorporated them into an ordinance enacted by the City Council

The ordinance is really one of the first in the history of the city which has definitive performance standards. For example, signs on the parking lot are restricted in size, location, and message.

Further, where adjoining setbacks have created front and side yards, the corresponding parking lot area must be treated with evergreen ground cover and properly maintained. Ornamental fence, masonry wall or compact evergreen hedge must be provided when the lot area faces the adjoining residential property or is within the residential zone.

No multi-storied structures shall be erected. The attendant's building on this lot was copied from The Magazine, which was used for stor age of powder and ammunition in Williamsburg, Va. Joseph Saunders, local architect and president of the Chamber of Commerce, made the design.

Bricks from the old building which was part of the property have been used to make a low wall around two sides of the lot. Sidewalks along the property were replaced with brick to conform to walks in front of adjoining residences.

Two Alexandria matrons dress in colonial attire for dedication of city's new parking area.

The municipal government, as an impetus to the development of private parking lots, purchased the buildings and grounds. The property was then leased, through bid procedures, to Park & Shop Corporation. All improvements are made by Park & Shop.

The Park & Shop lots are operated by attendants. The city itself leases one parcel of ground for parking

Where You Need a REAL Clamp-

Smith-Blair Type 221-10-inch wide-Full Circle Clamp Coupling used to repair a ⅓ circumferential break in a 6-inch line.

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The above installation is typical of repairs in a large water system where lines are under 80-to 140 psi and located in the San Andreas fault area. Conditions like these dictate a REAL Clamp—a proved, dependable Smith-Blair Full-Circle Clamp Coupling.

The new Smith-Blair Full-Circle Clamp Coupling with the "Easy-In" bolting feature; self-positioning and self-aligning malleable iron lugs are carefully designed to make installation simple and easy under all conditions. It gives an even band pull—a permanent, economical installation. Saves repair cost because the same job never has to be done twice. Why not get the full particulars on a REAL Clamp—the Smith-Blair Full Circle Clamp Coupling—by contacting any Smith-Blair office or Smith-Blair pipe fitting supplier TODAY?

NEW NET PRICE BOOK

The New Smith-Blair Net Price Book gives you a quick source of information on approximately fifty different products for fitting the outside diameter of pipe—also gives you a handy reference for all common pipe O.D. on the back cover. Your copy can be obtained promptly—without obligation—by writing any Smith-Blair Sales Office or Smith-Blair Jobber.

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SEE US AT THE A.W.W.A. CONVENTION SAN FRANCISCO JULY 12-17

purposes in the business area. This lot is metered. Ten cents an hour is the rate. Twenty-five cents for the first hour and ten cents for each additional hour are the rates on the other lots. Merchants, however, give credit slips to customers which may be used to defray the parking charges at these lots.

Two years ago the City Council adopted a Capital Improvements budget which included $400,000 for the purchase and development of parking lots. Half of this amount has been used to date.

Colonial Homes Restored

Many of our people have restored the old colonial homes, making them picturesque and an asset to the city, thereby correcting blighted conditions that eventually would have led to slum conditions.

To preserve the integrity of these homes, we established the present standards for the parking lots. Since we are an old city, a great deal depends upon the successful development of parking areas to attract business into our downtown area.

The ordinance permitted the leasing of parking areas to private operators. Private businessmen organized a Park and Shop Corporation, with some support by the municipal government. We will be glad to provide a copy of the ordinance to any interested city official.

Every Parcel An Unmistakable Identity

Property records of Alameda County, Calif. are kept by a system which is highly regarded by other assessors and used by some of them.

One of the important features is the parcel-numbered maps. Each parcel is assigned a three-part identification number that describes precisely where to find it on the maps. For example, for lot number 1-032-5 the figure "1" indicates that the parcel is delineated in the first map book volume, the "032", that it is on the third map in the volume and in the second block shown on that map; and the "5", that it is the fifth parcel in the block. No other piece of land in the county is given this same combination of figures, and all records pertaining to the parcel in question are inscribed with it. Thus the identity of a given parcel, whenever it is referred to by number, is unmistakable. If a parcel boundary is changed, say by splitting a lot in two or combining two lots into a single parcel, the old

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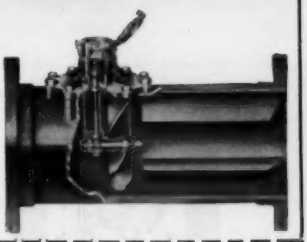

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number or numbers are retired from service and a new number which has not previously been used is then assigned to each one of the new parcels of property.

An assessor must have a complete description of each parcel of real property in his county and a continuing record of owner's names and assessed values of each parcel. The Acme card form used provides a fold over flap, with space for listing the names and addresses of successive owners on the top side and a complete property description on the underside. The main body of this form carries a 20-year record of assessed values of land, improvements, personal property, exemptions and solvent credits. This card is filed in numerical sequence by parcel number assigned from the assessor's master parcel map. The visible index of the card also shows the tax area code number and a progressive signal to indicate the different stages of progress in the assessment process. These stages, abbreviated on the visible margin, are: "Statement Filed, Real Property Valued, Personal Property Valued, Exemption Filed, Roll Written, Roll Proofed, and Code." Normally these stages are reached in succession and the signal is moved to indicate the status of the parcel.

Ownership Index

The Ownership Index is listed on Flexoline equipment and is an alphabetical cross index to the property record, showing owner's name, parcel number and tax area number. This type of index works to a great advantage in answering requests for information regarding a property when there has been a change of ownership. At the time such change of ownership occurs a new alphabetical strip is typed and placed in its proper sequence. This unit is frequently placed on the public counter and may be used to the convenience of both the office staff and the public.

RUSSELL C. HORSTMANN
Assessor
Alameda County, Calif.

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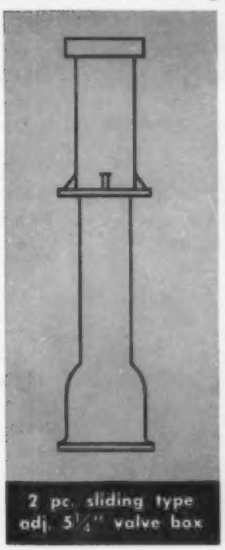
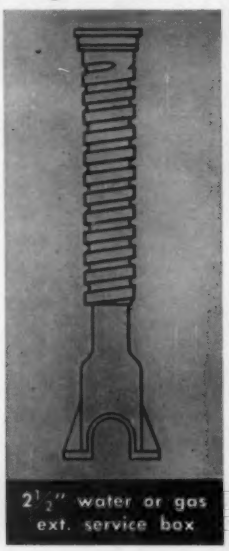
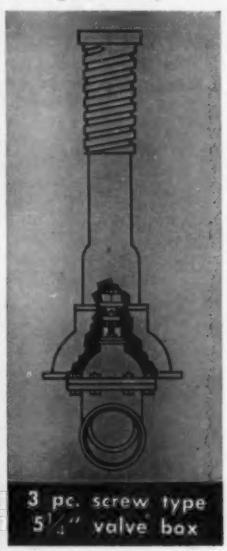


2 pc. sliding type adj. 5¼" valve box



2½" water or gas ext. service box



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BOX 55—STATION B DE 6764 BUFFALO 7, N. Y.

How Four Minnesota Cities Mist-ify Mosquitoes

If anyone thinks that the lack of mosquitoes in the Minnesota municipalities of Albert Lea, Glenwood, Owatonna and Wheaton is "mist-erious," he is on the right track. Each of the cities, conscious of the state's reputation as a vacation area, has an organized mist-spraying program that makes the mosquito realize that he is an unwanted inhabitant.

Albert Lea began its program in 1956 in response to requests from its citizens. Its mist sprayer not only is used to insure the absence of the mosquitoes but also to protect the shade trees and help rid the city flies. The sprayer is mounted on a trailer pulled by a farm tractor; the sprayer nozzle stands about six feet off the ground. Thus, in most cases it can spray over the tops of cars. It has a high capacity air output which moves the spray at least 100 feet without the aid of the wind. The town employs a 25% water soluble DDT insecticide with a small amount of malathion added for an immediate kill. The malathion gives the town good public relations because citizens get immediate relief after the sprayer goes by. The DDT gives longer lasting protection. Because it is water soluble, the insecticide is easily washable off cars and win-

dows. Three sprayings a year handle the nuisance problem, except in park areas, playgrounds, baseball fields, etc., which get four.

Albert Lea depreciates its spraying equipment on a 10-year basis. Cost, including labor, insecticide, and equipment runs at $900 per year for coverage of the entire city. Town officials time spray work on a complaint basis or on the basis of their own observations.

Glenwood purchased spray equipment last year but had to use it only once because of an extremely dry season with very few insect pests. The sprayer costs approximately $85 per day to operate, including time, materials, labor and equipment. The insecticide used is a 25% concentrate of DDT and malathion.

Owatonna purchased its insect-control equipment from a special 50-cent per capita tax authorized by the legislature. The city's crews apply the insecticide once a month in all areas except parks and rural locations. Residual effects can be noted for five to six days. Operating costs run approximately $66 per day.

Wheaton's program is in its second year. Spraying starts around June 1 and ends during the early part of September. The city has organized a "spotter" system to report the mosquitoes. Residents who live near the edges of town report presence of the pests and the crews immediately go into action. Crews also time their spraying work with the "hatch out" period, depending on the weather. Village officials estimate operating costs at $50 per day for spraying, according to O. E. Spafford, Village Clerk.

All four cities are using John Bean mist sprayers.

RADIO NETWORK

A two-way radio network linking hospitals and doctors in Georgia has been worked out by the Georgia State Health Department and State Civil Defense organization. A General Electric base station transmitter and six mobile radio units for the State Health Department is the initial step, with transmitters and receivers planned for each of the Health Department's 38 districts. A separate network will connect 150 public hospitals in the state and hundreds of physicians. Primarily for wide-scale emergencies, the system will be employed as needed.

Municipalities Continue to Annex New Areas, People

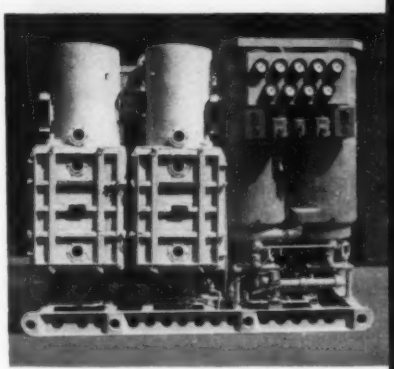
Only twice in the last 14 years have the incorporated urban areas annexed more area than they did in 1958, according to the International City Managers Association. The total annexed, over 485 square miles, was the second largest since 1947. Some of the larger annexations included:

	Area Annexed
Flagstaff, Ariz.	**50 sq. mi.**
Lubbock, Tex.	**45 " "**
San Diego, Calif.	**42 sq. mi.**
Dallas, Tex.	**35 " "**

Cities who gained most in population annexation include:

	Population Annexed
Phoenix, Ariz.	**50,000**
Columbus, Ga.	**40,000**
Norfolk, Va.	**38,000**
Vallejo, Calif.	**28,000**

NEW **MAXIM** EVAPORATOR STEPS UP EFFICIENCY



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Maxim's new 10,000 gpd Thermo-Compression Evaporator is the first truly multi-stage (10 stages) evaporator in operation. Establishing a new high in efficiency, this plant can be operated for long periods without shutdown for cleaning. A complete packaged unit, (furnished with or without boiler and generator), it is designed to be transported by air.

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OFFICIAL INVESTIGATION SHOWS CHEVRON-4* ANSWERS THE NEED FOR BOTH QUALITY AND THRIFT

Let the impartial laboratory help you make the best buy in police and fire department uniforms this year. An official scientific investigation for a key metropolis (name on request) brought out these facts: Chevron-4,* tested against even premium-priced fabric, rates highest in durability and resistance against shrinkage, fading and tearing.

Chevron-4's unique blend of four top-quality fibers is specially engineered to meet your toughest uniform requirements. Chevron-4* is lightweight, yet warm . . . durable, yet comfortable and pliable . . . parade-dress smart, yet bulldog-tough! What's more, Chevron-4's wash-and-wear convenience means real economy . . . lower cost on the initial purchase . . . minimum cost on upkeep!

In city after city, administrators and fire and police personnel are looking to Chevron-4* fabric to meet and beat the high cost of good uniforms. Find out for yourself how the laboratory rates this wonderful fabric. Write or call today for the Official Investigation File.

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*CHEVRON-4 is a Mount Vernon Mills Fabric: Dacron† 47.5%, Orlon† 28.6%, Wool 19.0%, Other Fibers 4.9%. †DuPont Trademark

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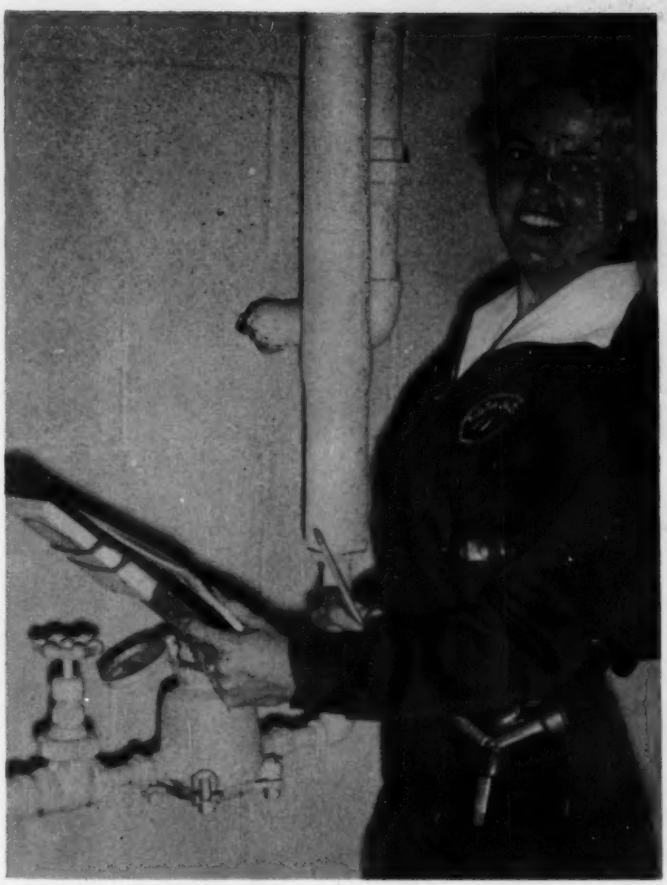
Water Meter Maids

. . . please the housewives, reduce water meter reading costs

By **R. L. CHANDLER**, Manager
Johnson County
Water District No. 1
Mission, Kansas



Meter readers like Jean Hedges put speed, accuracy and glamor into the water works service.

Men in the water works industry should be pleased as punch to learn that it pays to hire good-looking women to read meters. Water District No. 1 of Johnson County, Kans., serving southwest suburban Kansas City, has chalked up these benefits from the service of its four "Meter Maids":

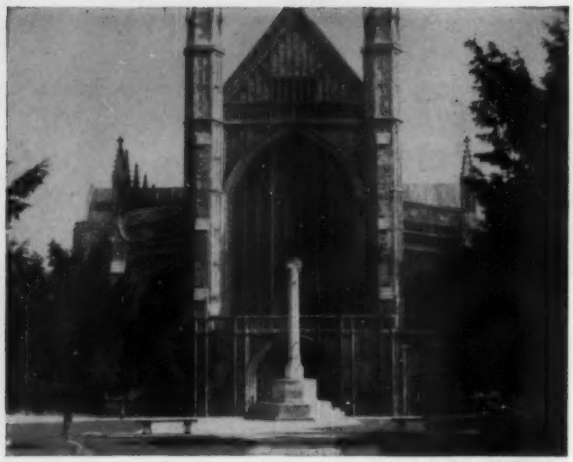
- **The girls can read as many or more meters than the men.**
- **Housewives would rather have women entering their homes to read meters than men.**
- **The girls can be relied upon to do as thorough a job as the men.**
- **An alert girl will stay on the job of meter reading longer and more loyally than a man.**
- **The business-like appearance of the girls as they hustle through their work has won many friends for the water district.**

The district has been using women to read meters for the past seven years. Mr. L. S. McArthur, the previous manager of the district, started the practice when the district was a private water company. He reasoned correctly that the one way the customer has contact with the company is through the meter reader, and saw no sense in hiring a refugee from the relief rolls to do the work. Every time he hired an alert young man to read meters, he would work for a while, then become impatient if he was not promoted.

The experiment started paying off immediately. The girls consistently read more than 240 meters per eight-hour day. The housewives also expressed pleasure because they felt better about a woman entering the house than a man. The women meter readers exercised more care in walking around washings that were hung up in the basement. In all, masculine domination of the meter-reading busi-

Howard Moore has probably the best job of any supervisor of meter readers and service men. Left to right, his feminine meter readers are Ruth Curran, Jean Hedges, Dorothy Moll, and Wanda Rutherford.

Aqueduct, 105 B. C.



Cathedral, 1065

Fountain, 1650

Ludlow Hydrant, 1883

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VALVES AND HYDRANTS

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ness suffered a very severe blow.

Incidentally, the girls are getting higher pay than male meter readers. When the men can meet the production rate set by the girls, they will receive the same pay.

The four girls go out in the morning in two pick-up trucks; meet each other for a coffee break in the middle of the morning. If they are in the same area at noon, they quite often eat lunch together. If houses are scattered, the truck is used for transportation; when the houses are close together, they attempt to park the truck in such a way that each girl will walk towards the truck.

We provide each of the women with a set of uniforms that generally lasts for a year. This consists of five slacks, two jackets, and five blouses. We expect the girls to do the cleaning.

The biggest hazard the girls face is not "wolves" but dogs. Almost every house has at least one dog, and some of them are hazardous. We make a notation of troublesome dogs on the meter sheet. Where dogs have been known to cause trouble the girls can ask the owner to tie or confine the dog. We have tried using dog candy, but when a dog jumps, it is difficult to reach into your pocket and pull out dog candy. One of the girls says that the best thing to do is to "look fierce and growl right back at the dog." She asserts that the dog will cower every time.

Although the girls are trim and attractive, they are by no means teen-agers. Mrs. Dorothy Moll, who has been reading for us the longest time, has read meters for over seven years. She is 42 and has three children. Mrs. Ruth Curran is 39 and has been with us over six years. She has four children and one grandchild. Mrs. Wanda Rutherford has worked for us four years and has one daughter. Mrs. Jean Hedges has worked for us two years.

Far West Cities Win Awards

Salt Lake City and San Diego received highest awards for sanitation programs conducted by their health departments throughout the country. Presentations were made at the annual meeting of the Western Branch of the American Health Association last month by Dr. Berwyn Mattison, executive director of the American Public Health Association.

In the competition, sponsored by the Public Health Committee of the Paper Cup and Container Institute, the Salt Lake City, Utah Health Department was judged first for "outstanding achievement in the development of a program for environmental sanitation" and the San Diego, Calif. County Health Department was judged first for "outstanding achievement in the development of a program for eating-and-drinking sanitation."

A special certificate of merit was awarded to the Albuquerque, N. M. Health Department for the excellence of its programs in both divisions of the contest—environmental sanitation and eating-and-drinking sanitation. Larry J. Gordon, the department's director, was present to receive it from Dr. Mattison.

Dr. Mattison also reported that the jury had recommended that letters of commendation be sent to the Alameda County, Calif. Health Department and the Nashville-Davidson County, Tenn. Health Department for the excellence of their programs of environmental sanitation.

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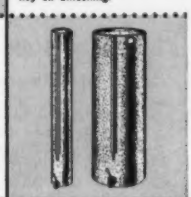

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ZONING AND PLANNING NOTES

Edited by NORMAN WILLIAMS, Jr.

Redevelopment—Resale to Fordham University

NEW YORK. *64th Street Residences* v. *City of New York*, 150 North Eastern (2d) 396 (Court of Appeals (highest court), May 1, 1958).

Under the Federal Title I redevelopment program, New York City condemned an area of some thirteen street blocks on the West Side; and after write-down the land was resold to various sponsors, including *inter alia* a membership corporation to promote musical and dramatic arts, and Fordham University—in the latter instance for a new campus. The resale of land at a loss to Fordham was challenged as a violation of the state and federal constitutional prohibition against subsidies to denominational institutions, and it was noted that "Fordham University was the only bidder (at the previously negotiated price) for" the area in question.

In the opinion, the Court held that the resale to Fordham at a loss did not involve any subsidy to Fordham.

> "But what the city is buying is not the same as what Fordham is buying. The city buys land and buildings. Fordham buys the same property but subject to its agreement to raze the buildings, relocate the tenants and use the cleared land for a collegiate campus and buildings only. What Fordham is paying for is the re-use value of the land. There is in this record no dispute of the fact, found by both courts below, that the $7 per square foot which Fordham agreed to bid, and did bid, is at least equal to the re-use value as established by several appraisals, all of which reported figures lower than $7 per square foot. Therefore, there is no substance to the assertion, on which this whole suit depends, that Fordham is getting a gift, grant or subsidy of public property. It is, of course, getting a benefit in the sense that it is being permitted to acquire valuable and desirable property at a price which is probably lower than it would have to pay if it had to negotiate with all the private owners, but the private owners are getting from the city the full value of the property in its present condition and use. The city benefits by the achievement of its valid municipal purpose of eliminating a slum. The State and Federal statutes contemplate that the purchaser from the city will pay less than the city pays since it will always be the case that the city is buying land and buildings and selling either cleared land or land which the purchasers must agree to clear and use for restricted purposes.
>
> "Any collegiate institution could have been a bidder at the auction. Special Term pointed out, probably correctly, that Fordham would be deprived of constitutional rights if it alone were excluded from the bidding. Perhaps this is only another way of saying that, since this sale is an exchange of considerations and not a gift or subsidy, no 'aid to religion' is involved and a religious corporation cannot be excluded from bidding."

Residences in Business Districts—Bulk Regulations

NEW JERSEY. *San-Lan Builders* v. *Baxendale*, 145 Atlantic (2d) 457 (Supreme (highest) Court, November 3, 1958).

In this case a five-story apartment house was proposed, with two stores on the first story and 23 apartments, on a plot of about 10,000 square feet, i.e., at a density of about 100 dwelling units per net acre—in a Business District in a town across the George Washington Bridge from New York City. A permit was refused, on the ground that the proposed building would not conform with the side and rear yard and (50%) coverage regulations for "apartment houses," which were set forth in the Residence District regulations, and which —so the Borough argued—were carried over into the Business District regulations. The developer argued that the building should be regarded not as an apartment house but as a "business district building," which must conform only to the less restrictive bulk regulations (90% coverage) set forth in the Business districts.

In the opinion the Court (reversing the lower court) held that, viewing the ordinance as a whole, the uses (including apartment houses) permissible in Residence Districts were also permitted in Business Districts, "but subject to all the restrictions covering such uses in the more restrictive district—which, in effect, run with the use. The Court argued, with some cogency, that no other interpretation would make any sense, particularly in view of the statutory purposes of residential zoning. This relevant passage is striking:

> "Zoning ordinances, in general, 'operate in two different ways. They regulate the use to which land is put, and they control the bulk of buildings, i.e., the size, shape, and placement of buildings on the land. . . . Bulk controls are used to achieve three similar ends: control over density of population in living and working areas, adequate daylighting of buildings, and sufficient open space around buildings for rest and recreation. Population density control is aimed at solving some of the problems of congestion,' striking as it does 'at the root of the traffic problem by preventing overconcentration,' furnishing 'a sound basis for planning municipal services such as schools, sewers, and transportation lines,' and providing 'the basic tool for organizing commercial and residential areas in more nearly self-contained neighborhoods' . . . 'daylighting of buildings and open space provisions are supplementary to density controls but no less vital, for they are also aimed at increasing the amenity of city life and, correlated with density controls, at the abolition of blighted areas.' And see Toll's 'Zoning for Amenities,' 20 Law and Contemporary Problems 266 (1955), where the writer offers cogent reasons for the wider employment of the usable open space technique as a means of serving basic zoning principle."

No one would regard the draftsmanship of the ordinance provisions in question as a model of clarity; but the decision is clearly correct. People are people, and are likely to have the same needs for daylight and open space—even if they live in suburban business districts. Moreover, it is gratifying to have so explicit a judicial recognition of open space as a primary goal of zoning.

Electric Generating Plant On Island in Residence District

CONNECTICUT. *Wilson Point Property Owners Association* v. *Connecticut Light and Power Co.*, 140 Atlantic (2d) 874 (Supreme (highest) Court, April 15, 1958).

In this case, the power company proposed to build a power generating plant on a peninsula in Norwalk Harbor, zoned for residence, in order to provide increased electric power for a substantial area of southwestern Connecticut. The local zoning commission and the State Public Utilities Commission approved the site, and this approval was challenged by residential property owners located nearby and across the harbor.

In the opinion the Court held that, while the possibility of additional sites was relevant, approval by the Commission could be upheld by proof that such site possessed reasonable advantages. After a detailed review of the controversy, the Court recognized the established practice in electrical engineering to locate generating facilities as close as possible to the center of the load, and approved the site. On the question of the need for additional facilities to sell power to another company in order to supply territory outside the first company's franchise area, the Court held that this was a valid reason for developing this site.

Parking Requirements for Church—Measurement Of Church's Capacity

MISSOURI. *McKinney* v. *Board of Zoning Adjustment of Kansas City*, 308 South Western (2d) 320 (Court of Appeals, December 2, 1957).

In this case a permit was granted for a combined church and parochial school building on a site of over one acre in a fully-developed single-family residential area; and the residents protested on the grounds (inter alia) of traffic hazards, disturbance of the peace and quiet of a residential neighborhood, and destruction of a few trees. The local zoning ordinance required a stated amount of parking, related to the capacity of a church; and the question at issue here was whether the measurement of the capacity of the church should include the storage (recreation) area and the cafeteria, as well as the church proper.

In the opinion, the Court held that under the ordinance recreation space should be included in the calculated capacity, but not a storage area (even though originally planned for recreation) or the cafeteria. The parking was held sufficient under the ordinance.

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LEGAL NOTES AND DECISIONS

Prepared by NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICERS, Charles S. Rhyne, General Counsel

Adverse Possession—
Land Used for School

In action concerning ownership of land claimed by school district where record title in plaintiff's name, held title passes to school district which had been in exclusive possession for over 100 years. *Millious* v. *Board of Education*, 181 N.Y.S. 2d 154 (N. Y. Sup. Ct., Tioga Cty., July 26, 1958)

Alley—Vacation of
For Private Interest Invalid

Held, that city council has no authority to vacate public alley for benefit of private individual. *Hedrick* v. *Padon*, 333 P.2d 552 (Okla., Sept. 16, 1958)

Annexation of School District Denied

In proceeding to detach territory from one school district and annex it to another, held evidence relating to best interests of pupils was insufficient to support granting of petition. *Board of Education* v. *County Board*, 153 N.E.2d 378 (Ill. App., Oct. 8, 1958)

Arts and Crafts Center—
Governmental Function

In action for injury sustained in fall on stairway at municipal arts and crafts center, held city engaged in governmental function and not liable. *Eversole* v. *City of Columbus*, 154 N.E.2d 442 (Ohio App., Feb. 11, 1958)

City Council—Conflict of Interest
Does Not Disqualify Members

Where interests of councilmen were too insignificant to warrant an assumption that their vote would be influenced, held councilmen not disqualified. *Van Itallie* v. *Borough of Franklin Lakes*, 146 A.2d 111 (N. J., Nov. 17, 1958)

City Employees—Salary During
Illegal Dismissal Denied

In action by municipal employees to recover back salary where they did not file application for such salary with city clerk as required after judicial determination that dismissal was illegal, held city not liable. *Bianchi* v. *City of Newark*, 146 A.2d 475 (N. J. Super., App. Div., Dec. 8, 1958)

City Hall—Rental for Wedding—
Proprietary Function

Held, that township in permitting use of first floor of township hall for private celebration for small fee was engaged in proprietary function and liable for injuries sustained by guest and incidental damage to guest's husband. *Dohm* v. *Township of Acme*, 93 N.W.2d 323 (Mich., Dec. 2, 1958)

City Property—Sale—
Specific Performance Denied

Held, that alleged acts of individual city commissioners would not stop city from denying that sale of city land at auction was confirmed as required by charter. *Robinson* v. *City of Gainesville*, 105 S.E.2d 903 (Ga., Nov. 7, 1958)

City-State Relations—City Property
Condemned for Highways

Held, state or county wherein such property is located may take and condemn for highway purposes city property without its consent. *Town of Greenwood Village* v. *District Court*, 332 P.2d 210 (Colo., Nov. 24, 1958)

Contempt—
City's Power to Punish Upheld

Provisions of city charter authorizing recorder to punish for contempts, held to allow him to punish for contempt of court defined under statute relating to such contempts of courts created by General Assembly and fact that charter does not define contempt does not impair recorder's power. *City of Macon* v. *Massey*, 106 S.E.2d 23 (Ga., Nov. 7, 1958)

Dogs—
Warden May Not Kill When Licensed

In action by owner to prevent dog warden from destroying his dog, held warden was not authorized to kill licensed dog which was not taken while running at large or in the act of harrassing farm or domestic animal. *Perkins* v. *Hatlery*, 155 N.E.2d 73 (Ohio App., June 3, 1958)

False Arrest of Shopper—
Policeman Liable

Where officer was requested to investigate person whom he was told had cashed a check in place of business where she was not known and detained her even though there was no irregularity in the check, held officer liable for false arrest. *Ewing* v. *Kutch*, 330 P.2d 361 (Okla., Sept. 30, 1958)

Federal-City Relations—
Condemnation of City's Water Sources

In action by municipalities to enjoin the government from acquiring its underground water sources by eminent domain in connection with an Air Force base, held motion to dismiss granted. *Town of Durham, N. H.* v. *United States*, 167 F. Supp. 436 (D. N. H., July 11, 1958)

Gas Rates—
Regulation By City

In action to enjoin city from preventing gas company from raising its rates, held that franchise for sale of gas granted by city of second class which subsequently became city of first class was made with right of rate regulation as part of the contract. *Nebraska Natural Gas Co.* v. *City of Lexington*, 93 N.W.2d 179 (Neb., Nov. 28, 1958)

Handbills Ordinance Upheld

Ordinance prohibiting distribution of handbill which does not identify writer, printer or manufacturer held valid. *People* v. *Talley*, 332 P.2d 447 (Cal. Super., Los Angeles Cty., Nov. 17, 1958)

Housing—Injury by Fire—
City Not Liable

In action by tenants of city-owned apartment building for injuries resulting from fire where city was charged with violation of Multiple Residence Law, held complaint dismissed. *Motyka* v. *City of Amsterdam*, 179 N.Y.S.2d 924 (N. Y. Sup. Ct., App. Div., Dec. 2, 1958)

Licenses—
Going Out of Business Sale Enjoined

Where retail store was denied license to conduct "forced out of business or final sale" but persisted after repeated summonses in holding such sale, held this was basis for injunctive relief. *City of New York* v. *Windsor Madison Corp.*, 179 N.Y.S.2d 734 (N. Y. Sup. Ct., N. Y. Cty., Oct. 7, 1958)

Obscene Film—
Ban By Ordinance Upheld

In suit to enjoin city from preventing petitioner from showing certain motion pictures under ordinance forbidding exhibition of indecent pictures, held where constitutionality or validity of ordinance not questioned, court of equity had no jurisdiction. *Dickinson Operating Co.* v. *City of Kansas City*, 317 S.W.2d 638 (Mo. App., Nov. 3, 1958)

Parking Meter Spaces—
Advertising In Banned

Where defendant placed a large sign advertising his business on top of his car and parked it regularly in metered parking spaces but transacted no business from it, held violation of ordnance prohibiting use or occupancy of parking meter space for carrying on business. *Cherry* v. *Minton*, 314 S.W.2d 565 (Ky., June 20, 1958)

Parking Trucks In Residential Zone—
Ban Upheld

Parking truck used in business at residence overnight, held was not accessory use of premises permitted under prior ordinance, hence cannot continue as nonconforming use under present prohibitory ordinance. *Facci* v. *City of Schenectady*, 176 N.Y.S.2d 827 (N.Y. Sup. Ct., Schenectady Cty., Dec. 18, 1957)

Radar Evidence of Speed Upheld

In trial of speed ordinance violation, held testimony of expert as to nature and scientific principles of radar instrument was superfluous and failure to record such was not prejudicial. *People* v. *Wylie*, 179 N.Y.S.2d 901 (N. Y., Niagara Cty., Sept. 10, 1958)

Railroads—Rate Increase Upheld

In appeal from Commission order approving rate increase where city claimed discrimination between rates within city limits and rates from points outside city to points within, held rate increase valid. *City of Chicago* v. *Illinois Commerce Commission*, 153 N.E.2d 574 (Ill., Nov. 14, 1958)

Sewer Assessments—
Benefits Not Required

Where land would not be served by sewer, held one could not presume no benefits would accrue to land since health of entire city, including this land, was at stake. *Tudor* v. *City of Rialto*, 331 P.2d 122 (Cal. App., Nov. 5, 1958)

Sewer Rent Funds—
Use For Dredging Invalid

Where overflow outlet had been used for many years and had been periodically dredged, held cost of dredging could not be met from sewer rent fund. *Bellizza* v. *Gerosa*, 179 N.Y.S.2d 255 (N. Y. Sup. Ct., N. Y. Cty., Sept. 17, 1958)

Urban Renewal Bonds Upheld

Urban renewal bond ordinance not invalid on ground that it failed to describe the type of bonds to be issued where title sufficiently identified and described general obligation of bonds. *City of Kansas City* v. *Robb*, 332 P.2d 520 (Kan., Dec. 6, 1958)

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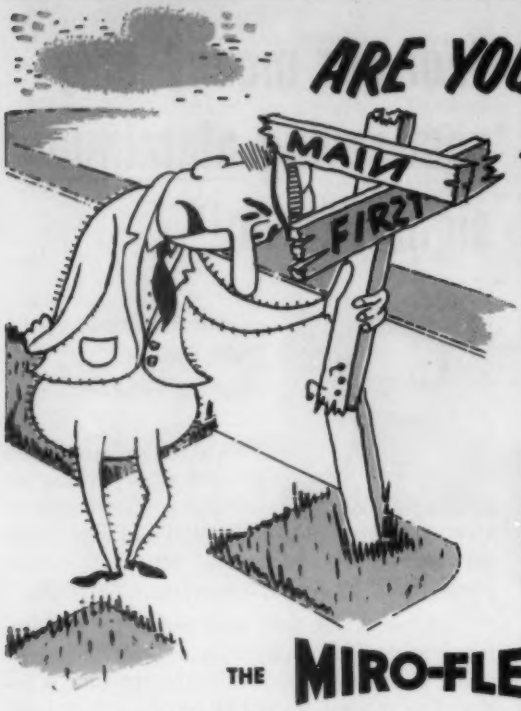

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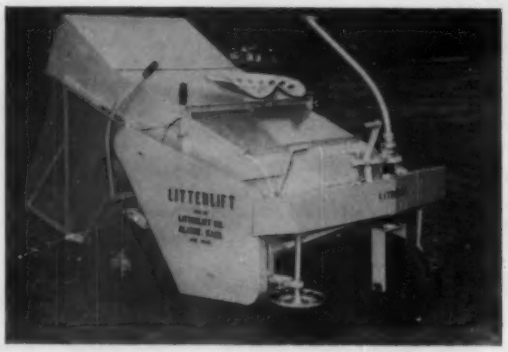

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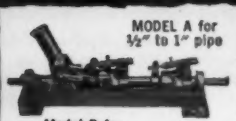

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Palm Springs, Calif.

L. P. Cookingham
Ft. Worth, Texas

W. Paul Watts
Santa Paula, Calif.

Allen R. Schell
La Verne, Calif.

JOHN A. ALEXANDER, formerly of the U.S. Army, Whittier, Alaska, has been appointed manger of Cordova, Alaska, succeeding Harry H. Houck.

DANA R. BAGGETT, assistant to the manager of Zanesville, Ohio, has been appointed manager of Gardiner, Me., succeeding Julian W. Deshaies, now manager at Augusta, Me.

HOMER B. BALL, JR., manager of Neosho, Mo., for the past four years has been appointed manager at Brookfield, Ill., succeeding C. Harold Eash.

HOMER B. BLY, manager at Gainesville, Tex. for the past nine years, has been appointed the first manager of Denton, Tex.

RICHARD J. BOWEN, formerly assistant to the manager of Lower Merion Township, Pa., is the new manager of Bristol Township, Pa., succeeding Henry Rolfes, now manager at Casper, Wyo. Mr. Bowen has also served as manager of Wells, Maine.

JACK S. BRANUM, manager of Hoisington, Kans., for the past four years, is the manager of Prescott, Ariz., succeeding Raymond T. Olsen, now manager of Bloomington, Minn. Mr. Branum was formerly manager of Burnet, Tex.

THOMAS E. DUFF, manager of Claremont, N. H., for the past two years, is the new manager of Andover, Mass. Mr. Duff was manager of Middlebury, Vt., from 1951 to 1957.

W. B. FEAGLE, who has had many years' experience in educational administration, has been appointed the first manager of Jasper, Fla. Mr. Feagle was formerly city clerk and assessor at Tavares, Fla., and later mayor of White Springs, Fla.

WILLIAM FORMYDUVALL, formerly manager at Louisburg, N. C., has been appointed the first manager of Ayden, N. C. He has also served as assistant manager of Chapel Hill, N. C.

L. R. GANDY, with the Texas State Department of Health for the past 15 years, has been appointed manager of Livingston, Tex., succeeding W. C. deCordova who has retired.

JOHN J. GRAY, research associate for the Institute of Public Affairs at the University of Texas, has been appointed manager of Asheboro, N. C., succeeding Clifford Pace. Mr. Gray was formerly manager of Farmers Branch, Tex., and administrative assistant at Dallas, Tex.

WILLIAM G. HEAD, formerly manager at Carolina Beach, N. C., is the first manager at Canton, N. C.

MILTON S. HETZEL, JR., administrative assistant at Sunnyvale, Calif., is the new manager of Sebastopol, Calif., succeeding M. J. Bankhead.

WILLIAM JACOBSON has been appointed as the new manager of Wakefield, Mich. He succeeds William O. Mackie, who resigned after serving two years.

DAVID L. MANN, assistant manager of Essex Junction, Vt., is the new manager of Brandon, Vt. He was formerly administrative assistant at Windsor, Conn., and Portland, Me.

GEORGE C. MARTIN, assistant manager and city clerk at Palatka, Fla., became manager of that city on April 1, succeeding J. D. Bryan, who retired. Mr. Martin was formerly assistant to the manager at Sarasota.

ROBERT R. MITCHELL, borough manager at Hollidaysburg, Pa., for the past three years, has resigned to accept the managership of Sharpsville, Pa., succeeding Raymond S. Cox, Jr.

J. A. RICKARDS, former manager at Washington, N. C., and Winter Park, Fla., has been appointed manager of Haines City, Fla., succeeding Richard G. Simmons, now manager of Winter Park, Fla.

W. E. ROUTH, manager of Temple, Tex. for the past eight years, was recently appointed manager of Odessa, Tex., succeeding Dick G. Pepin, who has resigned to enter business.

ALFRED H. RYPSTRA, deputy manager of Grand Rapids, Mich., has been appointed manager of that city succeeding Donald M. Oakes, who had held the post since 1955.

ALLEN R. SCHELL, administrative assistant to the manager of Hayward, Calif., was recently appointed manager of La Verne, Calif., succeeding William F. Cornett, Jr., now manager of South Gate, Calif.

WERNER H. SCHMID, administrative assistant, Teaneck, N. J., has been appointed manager, succeeding James T. Welsh, now with the Ohio State Highway Department.

SIDNEY SMITH, formerly town and village manager of Cavendish, Vt., has been appointed town and village manager of Ludlow, Vt.

HAROLD TARLTON, city clerk of Hoisington, Kans., for the past three years, was recently appointed manager of that city succeeding Jack S. Branum, who resigned to become manager of Prescott, Ariz.

GERALD W. ULETT, city engineer at Pendleton, Ore., is the new manager of Coquille, Ore., succeeding I. M. Huddleston.

LEE S. VICKERS, manager of Gladewater, Tex., for the past three years, was recently appointed manager of Orange, Tex., succeeding Marlin Thompson, who resigned to practice law. Mr. Vickers was formerly manager of Rosebud, Tex.

DANIEL J. WAGNER, a retired rear admiral, U. S. Navy, is the new manager of Palm Springs, Calif., succeeding Robert W. Peterson.

HARRY A. WALL, previously with the State Bureau of Public Roads, Charleston, W. Va., has been appointed manager of Blacksburg, Va., succeeding W. F. LaVecchia, now employed as planning administrator for Henrico County.

H. J. WARBURTON, manager of Laramie, Wyo., for the past two years, was recently appointed manager of Roseburg, Ore., succeeding George W. Farrell.

W. PAUL WATTS, administrator for the United Water Conservation District, is the new manager of Santa Paula, Calif., succeeding Robert J. Huntley, now manager at La Habra, Calif.

ORIN F. NOLTING
Executive Director
International City Managers' Association

Cookingham Goes to Fort Worth

L. P. Cookingham, formerly manager of Kansas City, Mo., has been appointed as the manager of Fort Worth, Texas, succeeding J. Frank Davis.

Mr. Cookingham joined Kansas City as manager in 1940, after a nonpartisan group succeeded in wresting power from the "Pendergast machine." In the years that followed, Mr. Cookingham and a nonpartisan council brought the city from a deficit of more than $22 million to the forefront of the American municipal scene. Following the defeat of the nonpartisan group in the last election, the new council asked for Mr. Cookingham's resignation.

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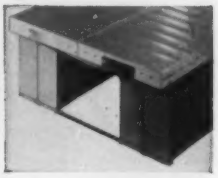

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CONVENTIONS — WHEN AND WHERE

Conventions listed this month for the first time are indicated by an asterisk (*)

July 8-11—Buffalo, N. Y.
NATIONAL ASSOCIATION OF TAX ADMINISTRATORS. Annual Meeting (Statler-Hilton Hotel). Exec. Sec., Charles F. Conlon, 1313 E. 60th St., Chicago 37, Ill.

July 9-11—Biloxi, Miss.
MISSISSIPPI MUNICIPAL ASSOCIATION. Annual Convention (Buena Vista Hotel). Exec. Sec., Miss Evelyn McGahey, P. O. Box 254, Jackson, Miss.

July 12-15—Los Angeles, Calif.
UNITED STATES CONFERENCE OF MAYORS. Annual Meeting (Statler-Hilton Hotel). Exec. Dir., Harry R. Betters, 1707 H. St. N.W., Washington 6, D. C.

July 12-17—San Francisco, Calif.
AMERICAN WATER WORKS ASSOCIATION—Annual Convention (Civic Auditorium). Exec. Sec., Harry E. Jordan, American Water Works Association, 2 Park Avenue, New York, N. Y.

July 19-21—Macon, Ga.
GEORGIA MUNICIPAL ASSOCIATION. Annual Convention (Dempsey Hotel). Exec. Dir., W. E. George, 603 Fulton Federal Bldg., Atlanta 3, Ga.

July 26-29—Detroit, Mich.
NATIONAL ASSOCIATION OF COUNTY OFFICIALS Annual Conference and Products Exhibit (Statler-Hilton and Sheraton-Cadillac Hotels). Exec. Sec., Bernard F. Hillenbrand, 1001 Connecticut Ave. N.W., Washington 6, D. C.

July 26-30—Seattle, Wash.
AMERICAN INSTITUTE OF PLANNERS. Annual Meeting (Olympic Hotel). Exec. Dir., W. C. Dutton, Jr., Suite 410, 2400 16th St., Washington 9, D. C.

Aug. 12-14—University Park, Pa.
PENNSYLVANIA SEWAGE & INDUSTRIAL WASTES ASSOCIATION. Annual Meeting (Pennsylvania State University). Sec.-Treas., J. R. Harvey, 996 South Main St., Meadville, Pa.

Aug. 17-21—Detroit, Mich.
NATIONAL SHADE TREE CONFERENCE. Annual Meeting (Hotel Statler), Sec.-Treas., L. C. Chadwick, 1827 Neal Ave., Columbus, Ohio.

Aug. 27—Springfield, Ill.
ILLINOIS WATER SUPPLY CONFERENCE. Annual Meeting (Abraham Lincoln & St. Nicholas Hotels). For information, address J. G. Ronchetto, Secretary, Water Resources Committee of the Illinois State Chamber of Commerce, 20 North Wacker Drive, Chicago 6, Ill.

Aug. 29-Sept. 3—Wiesbaden, Germany
INTERNATIONAL INSTITUTE OF ADMINISTRATIVE SCIENCES. Annual Congress. For information, address Robert Matteson, American Society for Public Administration, 6042 S. Kimbark Ave., Chicago, Ill.

Aug. 31-Sept. 3—Grand Rapids, Mich.
INTERNATIONAL ASSOCIATION OF FIRE CHIEFS. Annual Convention (Pantland Hotel). Gen. Mgr., B. Richter Townsend, 232 Madison Ave., New York, N. Y.

Aug. 31-Sept. 4—Milwaukee, Wis.
NATIONAL MUNICIPAL CEMETERY CONFERENCE. Annual Conference (Schroeder Hotel). Natl. Chairman, Vernon J. Birkhimer, Chief, Bureau of Cemeteries, 4809 W. Franklin St., Richmond 26, Va.

Sept. 2-4—Huron, S. D.
SOUTH DAKOTA WATER & SEWAGE WORKS CONFERENCE. Annual Meeting (Marvin-Hughitt Hotel). Exec. Sec., Don C. Kalda, State Board of Health, Pierre, S. D.

Sept. 6-9—Perugia, Italy
INTERNATIONAL FEDERATION FOR HOUSING AND PLANNING. Annual Meeting. For information, address Dennis O'Harrow, American Society of Planning Officials, 1313 E. 60th St., Chicago 37, Ill.

Sept. 7-11—San Francisco, Calif.
ILLUMINATING ENGINEERING SOCIETY. Annual Convention (Hotels Fairmont and Mark Hopkins). Man. Dir., A. D. Hinckley, 1860 Broadway, New York, N. Y.

***Sept. 8-10—Moran, Wyo.**
AMERICAN WATER WORKS ASSOCIATION—Rocky Mountain Section. Annual Meeting (Jackson Lake Lodge). Sec., V. A. Vaseen, 833 23rd St., Denver 2, Colo.

Sept. 9-11—Atlanta, Ga.
GEORGIA WATER & SEWAGE ASSOCIATION. Annual Meeting (Georgia Tech.). Sec-Treas., A. T. Storey, 1 Boyd St. N.W., Atlanta 13, Ga.

***Sept. 9-11—Liverpool, Nova Scotia**
AMERICAN WATER WORKS ASSOCIATION—Canadian Section, Maritime Branch. Annual Meeting (White Point Beach Lodge). Sec., J. D. Kline, General Manager, Public Service Commission, Halifax, Nova Scotia.

Sept. 9-11—Milwaukee, Wis.
AMERICAN WATER WORKS ASSOCIATION—Wisconsin Section. Annual Meeting (Hotel Schroeder). Exec. Sec., Harry Breimeister, 405 City Hall, Milwaukee 2, Wis.

Sept. 10-12—Mackinac Island, Mich.
MICHIGAN MUNICIPAL LEAGUE. Annual Meeting (Grand Hotel). Exec. Dir., John H. Huss, 205 State Street, Ann Arbor, Mich.

Sept. 10-12—Salt Lake City, Utah
UTAH MUNICIPAL LEAGUE. Annual Meeting (Newhouse Hotel), Exec. Dir., Tom McCoy, Newhouse Hotel, Salt Lake City, Utah.

***Sept. 13-14—Huntsville, Ala.**
ALABAMA LEAGUE OF MUNICIPALITIES. Annual Meeting (Hotel Russell Erskine). Exec. Dir., E. E. Reid, Alabama League of Municipalities, Montgomery, Ala.

Sept. 13-17—Montreal, Canada
COMMUNITY PLANNING ASSOCIATION OF CANADA. National Planning Conference (Sheraton-Mount Royal Hotel). Sec.-Treas., Miss J. M. Laventure, Community Planning Association of Canada, 77 MacLaren St., Ottawa, Canada.

Sept. 13-17—New York, N. Y.
INSTITUTE OF TRAFFIC ENGINEERS. Annual Meeting (Commodore Hotel). Exec. Sec., David M. Baldwin, 211 Stratchona Hall, New Haven 11, Conn.

***Sept. 14-16—Lexington, Ky.**
AMERICAN WATER WORKS ASSOCIATION—Kentucky-Tennessee Section. Annual Meeting (Lafayette Hotel). Sec.-Treas., J. Wiley Finney, Jr., 553 S. Limestone St., Lexington, Ky.

***Sept. 16-18—Akron, Ohio**
OHIO MUNICIPAL LEAGUE. Annual Conference and Products Exhibit (Mayflower Hotel). Exec. Dir., John P. Coleman, 60 E. Broad St., Columbus 15, Ohio.

***Sept. 16-18—Minneapolis, Minn.**
AMERICAN WATER WORKS ASSOCIATION—North Central Section. Annual Meeting (Hotel Pick-Nicollet). Sec.-Treas., L. N. Thompson, St. Paul Water Department, 216 City Hall, St. Paul 2, Minn.

***Sept. 16-18—Upper Saranac Lk., N. Y.**
AMERICAN WATER WORKS ASSOCIATION—New York Section. Fall Meeting (Saranac Inn). Sec., Kimball Blanchard, Neptune Meter Co., N. Y. Branch Sales Office, 2222 Jackson Ave., Long Island City, N. Y.

***Sept. 16-18—Yankton, S. D.**
SOUTH DAKOTA MUNICIPAL LEAGUE. Annual Meeting (Charles Guerny Hotel). Exec. Dir., J. G. Barger, P. O. Box 938, Aberdeen, S. D.

***Sept. 20-22—Dallas, Texas**
TEXAS MUNICIPAL LEAGUE. Annual Meeting (Baker Hotel). Exec. Dir., Steve Mathews, 402 Vaughn Bldg., Austin 1, Texas.

***Sept. 20-22—Old Point Comfort, Va.**
LEAGUE OF VIRGINIA MUNICIPALITIES. Annual Meeting (Chamberlin Hotel). Exec. Sec., Harold I. Baumes, 905 Travelers Bldg., Richmond 19, Va.

Sept. 20-23—Lake Placid, N. Y.
NEW ENGLAND WATER WORKS ASSOCIATION. Annual Meeting (Lake Placid Club). Sec., Joseph C. Knox, 73 Tremont St., Room 549, Boston 8, Mass.

Sept. 20-23—Seattle, Wash.
AMERICAN PUBLIC WORKS ASSOCIATION. Annual Convention (Olympic Hotel). Exec. Dir., Robert D. Bugher, 1313 E. 60th St., Chicago 37, Ill.

Sept. 20-24—Minneapolis, Minn.
AMERICAN TRANSIT ASSOCIATION. Annual Convention (Leamington Hotel). Genl. Sec., A. W. Baker, 355 Lexington Ave., New York 17, N. Y.

Sept. 20-24—Philadelphia, Pa.
AMERICAN INSTITUTE OF PARK EXECUTIVES. Annual Conference (Benjamin Franklin Hotel). Exec. Sec., Alfred B. LaGasse, American Institute of Park Executives, Ogelbay Park, Wheeling, W. Va.

***Sept. 23-25—Corbin, Ky.**
KENTUCKY MUNICIPAL LEAGUE. Annual Meeting (Cumberland Falls State Park). Exec. Sec., Carl B. Wachs, Room 64, McVey Hall, University of Kentucky, Lexington, Ky.

***Sept. 23-25—Grand Forks, N. D.**
NORTH DAKOTA WATER AND SEWAGE WORKS CONFERENCE. Annual Meeting (Dacotah Hotel). Sec.-Treas., W. Van Heuveien, c/o State Department of Health, Bismarck, N. D.

***Sept. 23-25—Saginaw, Mich.**
AMERICAN WATER WORKS ASSOCIATION—Michigan Section. Annual Meeting (Bancroft Hotel). Exec. Sec., T. L. Vander Velde, Chief, Section of Water Supply, Michigan Department of Health, Lansing 4, Mich.

Sept. 26-Oct. 1—New York, N. Y.
INTERNATIONAL ASSOCIATION OF CHIEFS OF POLICE. Annual Convention (Hotel Statler). Exec. Sec., Leroy W. Wike, 616 Mills Bldg., Washington 6, D. C.

***Sept. 27-29—Asheville, N. C.**
NORTH CAROLINA LEAGUE OF MUNICIPALITIES. Annual Meeting (Battery Park Hotel). Exec. Dir., Mrs. Davetta Steed, 1009 Raleigh Bldg., Raleigh, N. C.

***Sept. 27-29—Hutchinson, Kans.**
LEAGUE OF KANSAS MUNICIPALITIES. Annual Convention (Baker Hotel). Exec. Dir., Allen E. Pritchard, Jr., 512 Capitol Federal Bldg., Topeka, Kans.

(Continued on page 243)

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(Continued from page 241)

***Sept. 27-29—Kansas City, Mo.**
AMERICAN WATER WORKS ASSOCIATION—Missouri Section (President Hotel). Sec., W. A. Kramer, State Office Bldg., Jefferson City, Mo.

***Sept. 28-30—Toronto, Canada**
CANADIAN INSTITUTE OF SEWAGE AND SANITATION. Annual Meeting (Royal York Hotel). Sec.-Treas., Dr. A. E. Berry, 72, Grenville St., Toronto, Canada.

Sept 28-Oct. 2—Chicago, Ill.
NATIONAL RECREATION CONGRESS. Annual Meeting (Hotel Morrison). Sec.-Treas., Willard B. Stone, 8 W. 8th St., New York, N. Y.

***Oct. 4-7—Pittsburgh, Pa.**
PENNSYLVANIA MUNICIPAL AUTHORITIES ASSOCIATION. Annual Convention (Penn-Sheraton Hotel). Sec., Dr. Charles F. LeeDecker, 506 State Street Bldg., Harrisburg, Pa.

Oct. 11-14—Cleveland, Ohio
NATIONAL INSTITUTE OF GOVERNMENTAL PURCHASING. Annual Conference and Products Exhibit (Hotel Cleveland-Sheraton). Gen. Chairman, Leo Weil, Commissioner of Purchases and Supplies, Cleveland, Ohio.

Oct. 11-14—Philadelphia, Pa.
NATIONAL ASSOCIATION OF ASSESSMENT OFFICERS. Annual Convention (Sheraton Hotel). Exec. Sec., Albert W. Noonan, 1313 E. 60th St., Chicago 37, N. Y.

Oct. 11-14—Washington, D. C.
NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICERS. Annual Convention (Penn Harris Hotel). General Counsel, Charles S. Rhyne, 839 17th St., Washington 6, D. C.

Oct. 11-15—Boston, Mass.
AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS. Annual Convention (Statler Hotel). Exec. Sec., A. E. Johnson, 917 National Press Bldg., Washington 4, D. C.

Oct. 11-15—Dallas, Texas
FEDERATION OF SEWAGE AND INDUSTRIAL WASTES ASSOCIATIONS. Annual Convention (Memorial Auditorium). Exec. Sec., Ralph E. Fuhrman, 4435 Wisconsin Ave., N. W., Washington 16, D. C.

Oct. 13-16—Houston, Texas
UNITED STATES CIVIL DEFENSE COUNCIL. Annual Meeting (Shamrock Hotel). Sec., Elliott R. Jackson, Municipal Auditorium, Atlanta, Ga.

Oct. 18-21—Cincinnati, Ohio
NATIONAL ASSOCIATION OF HOUSING AND REDEVELOPMENT OFFICIALS. Annual Convention (Netherland-Hilton Hotel). Exec. Dir., John D. Lange, 1313 E. 60th St., Chicago 37, Ill.

Oct. 18-23—Washington, D. C.
AMERICAN SOCIETY OF CIVIL ENGINEERS. Annual Convention (Statler Hotel). Exec. Sec., William H. Wisely, 23 W. 39th St., New York 18, N. Y.

Oct. 19-22—Las Vegas, Nev.
INTERNATIONAL MUNICIPAL SIGNAL ASSOCIATION. Annual Convention (Stardust Hotel). Exec. Sec., Irvin Shulsinger, 130 W. 42nd St., New York 36, N. Y.

Oct. 19-23—Atlantic City, N. J.
AMERICAN PUBLIC HEALTH ASSOCIATION Annual Convention (Convention Hall). Exec. Dir., Berwyn F. Mattison, M.D., 1790 Broadway, New York 19, N. Y.

Oct. 24-29—St. Louis, Mo.
INTERNATIONAL CITY MANAGER'S ASSOCIATION. Annual Convention (Chase and Park Plaza Hotels). Exec. Dir., Orin F. Nolting 1313 E. 60th St., Chicago 37, Ill.

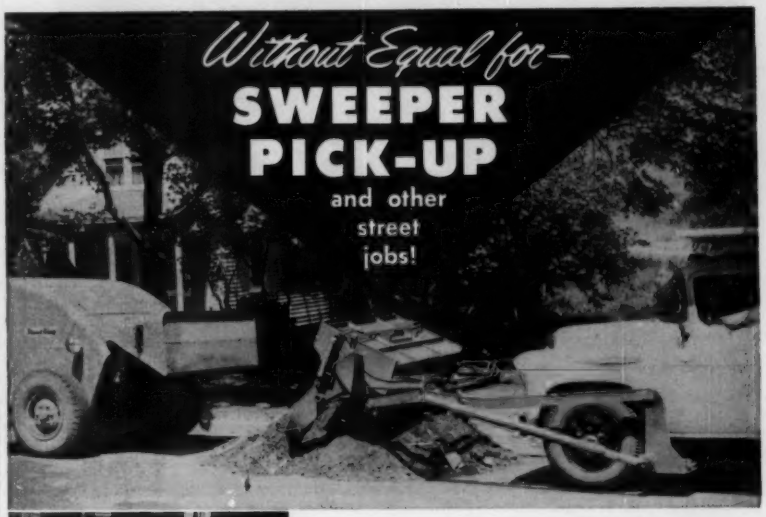
Oct. 25-27—Kansas City, Kans.
NATIONAL ASSOCIATION OF MUNICIPAL UTILITIES. Annual Convention (Town House Hotel). Asst. Sec., A. D. McGuire, P. O. Box 99, Overland Park, Kans.

Oct. 25-29—Houston, Texas
NATIONAL TAX ASSOCIATION. Annual Conference (Rice Hotel). Exec. Dir., Walter J. Kress, National Tax Association, 905 Payne-Shoemaker Bldg., Harrisburg, Pa.

Oct. 26-28—Minneapolis, Minn.
NATIONAL HIGHWAY CONFERENCE FOR COUNTY ENGINEERS AND OFFICIALS. Annual Meeting (Leamington Hotel). Exec. Vice Pres. Louis W. Prentiss, American Road Builders' Association, World Center Bldg., Washington 6, D. C.

Nov. 15-18—Springfield, Mass.
NATIONAL MUNICIPAL LEAGUE. National Conference on Government (Sheraton-Kimball Hotel). Asst. Dir., Allen H. Seed, Jr., 47 E. 68th St., New York, N. Y.

***Nov. 29-Dec. 2—Denver, Colo.**
AMERICAN MUNICIPAL ASSOCIATION. Annual Convention (Brown Palace Hotel). Exec. Dir., Patrick Healy, Jr., 1612 K St. N.W., Washington 6, D. C.



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How New York City is guarding its Croton Watershed against pollution

Migration to suburbia is creating a potential pollution problem of one of New York City's major watersheds. Here is what they are doing about it.

To meet the problem headon, the New York City Department of Water Supply, Gas and Electricity, under the direction of Commissioner Armand D'Angelo and Chief Engineer Edward J. Clark, has initiated a comprehensive sanitary survey. The New York City Croton and Kensico Watersheds cover a total of 400 square miles. A tremendous building boom in the watershed areas has brought with it a progressive and wide-spread problem of sewage and industrial wastes disposal. If the threat of pollution were ignored, New York City Engineers say that the usefulness of the watersheds would be seriously impaired.

Realizing that complete information on the watershed areas is needed before intelligent planning can be done, the Department's engineers working with representatives of Fairchild Aerial Surveys, Inc., prepared a program of aerial mapping of the complete area. Contact prints at a scale of 1″ = 2000′ and individual enlargements at a scale of 1″ = 400′ have already been delivered. Topographic maps, which include all cultural and physical features of the area, and soil analysis maps have been ordered and will soon be completed.

Once the Water Supply Engineers have the topographic and soils information, they will be able to plan and coordinate the construction of essential sanitary facilities in the watersheds. In addition, in areas of critical importance these maps will enable engineers to design sewerage systems for carrying the waste products off the watersheds.

Most cities today have planning problems. Fairchild aerial photomaps and topographic maps have proved to be valuable aids in making intelligent city planning decisions. Call your nearest Fairchild office and have the many Fairchild services explained to you.

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MUNICIPAL AND CIVIC PUBLICATIONS

Highway Construction Digest

HIGHWAY RESEARCH REVIEW #48—*Highway Research Board, 2101 Constitution Ave., Washington 25, D. C. December* 1958. 220*pp.* $4.

This review should fill a real need among city officials who want to keep abreast with what's new in highway research products and yet haven't the time to go through all the material published on the subject.

Besides giving digests of reports on new research projects, the review contains briefs and summaries which enable the interested reader to get a pretty comprehensive picture on what is being done in the highway construction field across the country.

An Analysis of Per Capita City Expenditures

CITY EXPENDITURES IN THE UNITED STATES—*By Harvey E. Brazer, National Bureau of Economic Research, 261 Madison Avenue, New York 16, N. Y.* 1959. 82*pp.* $1.50.

Dr. Brazer, of the University of Michigan, analyzes the per capita expenditures of 462 cities, including the 40 largest, using the year 1951 as the basis of analysis.

Statistical tables show that 462 cities in the U.S.A. spent $6½ billion in 1955, or 40% more than in 1951. Among these, Boston has the highest total expenditure per capita, $190.67; San Antonio, the lowest with $67.03. Los Angeles spent the most for education, $60.30, and New Orleans the least, $24.59. Jersey City spent the most for police protection, $19.63; San Antonio the least, $4.58. New York, surprisingly, stands 9th among the 40 largest urban areas in total expenditure per capita, 8th for welfare and police, 10th for sanitation, 17th for highways, 19th for fire protection, 23rd for education and 26th for recreation.

Grand Rapids Growing Pains

WHEN ONE-THIRD OF THE CITY MOVES TO THE SUBURB—*By Charles Press, Michigan State University, East Lansing, Mich.* 1959. 78*pp.* $1.

Grand Rapids, Mich., like many other large urban centers, has recently undergone a population shift from the city to the suburbs, leaving in its wake a number of pressing problems. In this little book, Dr. Press, who holds the position of Assistant Professor of Political Science at Michigan State University, examines these problems and classifies them under these main headings:

1. The need for financing local government services.
2. The need for building and preserving desirable residential neighborhoods.
3. The need to encourage continued industrial growth.

The solution of these problems, Dr. Press states, would achieve the three most necessary things sought for good communities, namely, reasonable taxes, decent homes, and sufficient industrial and commercial development to offer ample job opportunities.

As well as posing the problems, Dr. Press suggests some interesting solutions which make the book worthwhile reading.

For the City Engineer's Bookshelf

MINERAL AGGREGATES: 1958 REVISION — HIGHWAY RESEARCH BOARD BIBLIOGRAPHY #23; and STABILIZATION OF SOIL WITH CALCIUM CHLORIDE—HIGHWAY RESEARCH BOARD 24. *The National Academy of Sciences, National Research Council, 2101 Constitution Avenue, Washington 25, D. C.* 1959. 111*pp and* 96*pp.*, $2.20 *and* $2 *respectively.*

These two bulletins should make valuable additions to a city engineer's bookshelf. The first is an annotated and revised edition of the Highway Research Board's bibliography on Mineral Aggregates, published first in 1949 and newly revised and annotated by Professor J. F. McLaughlin of Purdue University; it is indexed both by subject and author. The second contains abstracts of published studies, as well as bibliographical material on stabilization of soils with calcium chloride. It includes translations of some recent Russian scientific studies.

"Land Pollution" or Cluster-City Planning?

CITIES IN THE MOTOR AGE—*By Wilfred Owen. The Viking Press, 625 Madison Avenue, New York 22, N. Y.* 1959. 176*pp.* $3.95.

Mr. Owen defines "land pollution" as the process whereby large land areas have been denuded of their natural growth for highway construction and cheap housing developments. About the former, he says, the design and location of highway facilities are treated as strictly engineering problems in which the sole objective is to keep vehicular traffic in rapid motion with no responsibility for relating the highway construction to the plans for the future city, nor for the fact that they—the new highways—will push out metropolitan boundaries still more, thereby multiplying existing problems. Of cheap housing developments, he says that they are the future blight areas that help to spread city slums into the suburbs.

He feels that a co-ordinated system of planned cluster-building developments, a system of green belts, and demarked city limits would remedy city expansion problems.

Help for Assessment Officers

ASSESSMENT ADMINISTRATION — *Edited by John O. Behrens. National Association of Assessing Officers, 1313 East 60th Street, Chicago 37, Ill.* 1959. 282*pp.* $5.

This book contains the papers presented at the conference of the National Association of Assessing Officers held in Cleveland, Ohio, last year. Among the subjects are assessment of urban-rural land, development and use of assessment ratios, assessment and taxation of timberland, assessment of business inventories, revaluation projects, and special problems in depreciation. The contributors include Edward S. Gould, City Assessor, Minneapolis, Minn.; Fred H. Newton, C.A.E., City Assessor, Hartford, Conn.; George Fox, Jr., Assessment Coordination Department, Little Rock, Ark.; John Gautier, Tax Assessor, Dade County, Miami, Fla.; and Harold Jaeger, City Assessor, St. Louis, Mo., to name only a few. Some of it is technical, all of it is factual and instructive.

Flood Damage Prevention

PLANNING FOR FLOOD PREVENTION—*By Jerroid A. Moore. Engineering Experiment Station of Georgia Institute of Technology. Atlanta, Ga.* 1959. 61*pp.* $1.

Mr. Moore is angry because, though floods have been the scourge of mankind since the time of Noah and though flood damage here in the United States takes a mounting toll in dollars and human lives annually, we are entering the jet-age with still no real effort at comprehensive planning for flood prevention.

He blames public apathy and want of initiative on the part of local authorities. He gives some concrete recommendations for remedial action which make this study a constructive analysis of a recurring problem.

Better Community Relations

COMMUNITY ORGANIZATION IN ACTION—*Edited by Ernest B. Harper and Arthur Dunham. Association Press, 291 Broadway, New York 7, N. Y.* 1959. 543*pp.* $7.50.

In this book the reader gets a closer understanding of communal and social welfare problems that have beset this country over the past 50 years and also of some of those dedicated souls who tried to follow the scriptural precept of Love Thy Neighbor.

The editors have brought together in this one volume the writings and critical comments of social workers and sociologists representing a cross section of American communities.

Cure for Its "Downtown" Obsolescence

A REPORT ON DOWNTOWN MIAMI, FLORIDA. *Prepared by the Department of Engineering, Miami, Fla.* 1959. 45*pp. No charge.*

The City of Miami, Fla., like many other American communities, large and small, is facing a crisis over the abandonment of some of its downtown areas by population shifts to the suburbs. In this brochure, prepared by the city's engineering department under its director, Arthur E. Darlow, a master plan is outlined with a definite ten-point program of which the principal two points are: greater use of mass transit facilities; and a pedestrian reserve or mall in the five-block area of greatest pedestrian activity, decorated and landscaped into a focal point of downtown interest.

City Government in Pennsylvania

SYSTEMS FOR ELECTING GOVERNMENT BODIES OF PENNSYLVANIA LOCAL GOVERMENT—*By Charles F. LeeDecker. Institute of Local Government, Pennsylvania State University, Philadelphia 4, Pa.* 1959. 57*pp.* $2.50.

Mr. LeeDecker's study on the methods of electing city governments in the State of Pennsylvania should be of interest to students of civic affairs. It contains some well-balanced arguments in favor of the newer "at large-system" of election as against the older "ward" system.

FRANK P. YACOBUCCI, Clerk of Courts, Summit County, Akron, Ohio.

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Port Authorities

THE USE OF THE PORT AUTHORITY IN THE UNITED STATES WITH SPECIAL REFERENCE TO THE SAN FRANCISCO BAY AREA—*By Terry Hoy, Barbara Hudson, John F. McCarty, and Stanley Scott. Bureau of Public Administration, University of California, Berkeley, Calif.* 1959. 66 *pp.* $2.

Those city officers who are beginning to view with alarm the increasing abrogation of civic power by the various autonomous or semi-autonomous Port Authorities will find additional food for thought in this report, the work of four enterprising students of the University of California.

City Manager or Consultant?

THE CITY CONSULTANT: PLAN OR EXPEDIENT?—*By Gladys M. Krammerer and Ruth McQuown. Bureau of Government Research, College of Arts and Sciences, University of Kentucky, Lexington, Ky.* 23*pp.* 50c (*Free to libraries*).

This study on Louisville, Ky. under the six-years' regime of Mayor Charles Farnley, when he leaned heavily on the services of his city-manager "consultant," Roy Owsley, is probably not the final word on the controversy over the plan. However, Dr. Kammerer, who holds the post of Professor of Political Sciences and Director, Public Administration Clearing Service, at the University of Florida and Miss McQuown, who is Research Associate at the University of Kentucky, have done an honest piece of research. Their conclusion: that more and more municipalities in America—particularly those of under a million population—are going over to the city-manager type of administration.

Altogether, it is a well-balanced, readable study, and would be a useful addition to the library of anyone interested in the pros and cons of the question.

New Concepts of Administrative Training

EDUCATION FOR ADMINISTRATIVE CAREERS IN GOVERNMENT SERVICE—*Edited by Stephen B. Sweeney. University of Philadelphia Press. Philadelphia, Pa.* 1959. 366*pp.* $4.50.

Dr. Sweeney, who did an admirable job with his recent symposium on metropolitan government, now earns fresh laurels with a new volume. This work brings together selected views on the training of young men and women for higher administrative posts in government.

Metropolitan Government

METROPOLITAN ANALYSIS—*a workshop discussion symposium—edited by Stephen B. Sweeney. University of Pennsylvania Press,* 3436 *Walnut Street, Philadelphia* 4, *Pa.* 1959. 189 *pp.* $4.50.

Thirteen wise men and one wise woman have contributed their views in this compendium of two workshops and a conference devoted to the problems of metropolitan government. Its publication in book form is part of the commemorative ceremonies in connection with the 75th Aniversary of the Wharton School of Finance, and the Fels Institute of Local and State Government, of Philadelphia, Pa.

The subjects treated cover a wide range and include among others: Dr. Henry D. Harral and Mr. Edmund N. Bacon's study on "Methodology for Achieving Metropolitan Area Study Objectives"; an analysis of social trends with relations to metropolitan areas with particular reference to Philadelphia, by Morton Lustig and Dorothy Schoell Montgomery; a paper on economic structure problems by James G. Coke and Evan B. Alderfer; and also a reasoned analysis of metropolitan government structures by George S. Blair and Lennox L. Moak.

In the non-Philadelphia section, Dr. Luther Gulick speaks for metropolitan New York, Mr. Charles R. Cherington for Boston, and Frederick G. Gardiner, Q.C., presents the case for Toronto. All treat their subjects with authority, and the total produces an extremely illuminating series on subjects of interest to officials and students of civic governments.

Grass Roots Urban Renewal

EDUCATION TO FORWARD URBAN RENEWAL IN PHILADELPHIA—*By Howard W. Hallman. Philadelphia Housing Association,* 1717 *Sansom Street, Philadelphia* 3, *Pa.* 1959. 49 *pp.* $1.

This is a report on a broad program to teach people how to achieve improvements in their dwellings and their neighborhood. It was prepared by Dr. Hallman under a grant received from the Thomas Skelton Harrison Foundation of Philadelphia.

The report makes a number of specific recommendations. The principal ones are: encouraging families to help themselves; development of a good relationship within the family; improvement of the health of the family through guidance in meal planning and preparation, through referrals of special cases to proper clinics for treatment; and educating the family to use its income wisely.

Richmond, California's Community Spirit

1958 COMMUNITY CHRISTMAS PROGRAM. *The Office of the City Manager, Richmond, Calif.* 1959. *Unpaged. Mimeo. No charge.*

This little book reads like one of Charles Dicken's Christmas Carols. It is paper bound, inexpensively got-up, and the story it tells is heartwarming, and entirely in keeping with the finest American pioneering tradition.

It is the City Manager's story of how the City of Richmond, Calif. embarked on a plan, begun in 1957 and improved in 1958, of celebrating the Yuletide season in a truly communal way with fun, games, Christmas "bees," skating parties, pantomimes, etc. which, besides providing a great deal of healthy, zestful enjoyment for the participating townsfolk, raised considerable funds for worthwhile charities.

Anyone who decries the present-day commercialism of Christmas should read this fine little book.

Local Tax Dollar

INITIAL TOWN PROPERTY SURVEY REPORT. *Prepared by Charles L. Crangle and Paul Henrick. New Hampshire State Planning and Development Commission, Concord, N. H.* 1959. 94 *pp. No charge.*

This report is of a survey conducted in 1957 to determine the assessed value, the tax yield, and percentage distribution of various economic classes of taxable property in each New Hampshire community. It is well tabulated for a comparative study with other towns and localities.

Municipal Hotdog and Peanut Stands Can Be Attractive

FOOD AND MERCHANDISE SALES PARK—*Edited by Leslie M. Reid. Park Management Series Bulletin #9. Issued by Michigan State University, East Lansing, Mich.* 1959. 39 *pp. No charge.*

This bulletin, prepared as part of a cooperative venture between Michigan State University and the American Institute of Park Executives, demonstrates by word and illustration that outdoor food kiosks when properly designed can be both beautiful and utilitarian, and not the blot on the landscape they are now. Any city park official looking for ideas will find them in this charmingly illustrated booklet of park food stands that really blend with their surroundings.

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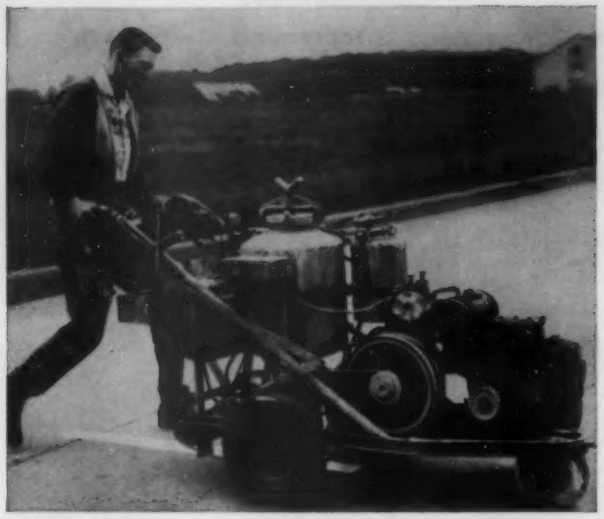

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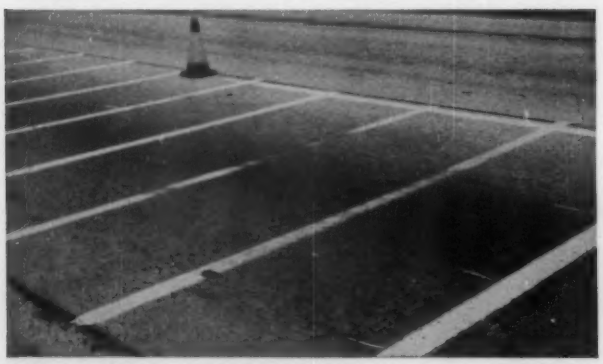

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Periodic Urban Population Shifts

THE CHANGING ECONOMIC FUNCTION OF THE CENTRAL CITY—*By Raymond Vernon. Committee for Economic Development, 711 Fifth Avenue, New York 22, N. Y. 1959. 92pp. $1.*

In this study which is sponsored jointly by the Ford Foundation and the Rockefeller Fund, the author traces the principal population shifts in 13 of the nation's leading industrial centers over the past 50 years.

The areas under study comprise: Baltimore, Boston-Lowell-Lawrence, Buffalo, Chicago, Cincinnati, Cleveland, Detroit, Los Angeles, San Francisco, New York-northeastern New Jersey, Philadelphia, Pittsburg, and St. Louis, a cross-section of U. S. industrial life. In each of these, the author notes a similarity of pattern, namely, a movement away from the old built-over center city into the newer suburbs. And in each city this population shift has left in its wake out-dated buildings and derelict slum properties, thereby increasing the tax load on business and the remaining city dwellers.

Mr. Vernon foresees that the coming of automation and the consequent need of industry to locate away from built-up areas will accelerate these population shifts, and he predicts that even larger areas of what are now city-hubs will become obsolescent "shells" with resulting declines in property value and decrease in city tax revenues.

How South Africa Attacks Traffic Problems

THE INFLUENCE OF TRAFFIC ENGINEERING ON URBAN DEVELOPMENT WITH SPECIAL REFERENCE TO THE CITY OF CAPE TOWN—*By S. S. Morris. The Institution of Municipal Engineers, Salisbury, Union of South Africa. 1959. 42 pp. Paperbound. No charge.*

Dr. Morris, city engineer of Cape Town, pays tribute to U. S. traffic engineering at the beginning and at the end of this informative report.

Dr. Morris says, with refreshing candor, that human beings and not the motor car must receive first consideration. He urges provision not only for freeways and arterial roads but for shopping precincts, pedestrian malls, parks and squares. The trend in South African city planning is away from the "axis" arterial roads, first popularized by Hitler's autobahn builders in Germany, and leans more to the ring-road system urged by THE AMERICAN CITY for many years and gradually being adopted in the larger metropolitan areas.

State Universities and City Taxes

THE UNIVERSITY AND THE CITY. *By James W. Harvey. Bureau of Public Administration, University of California, Berkeley 4, Calif. 1958. 53 pp. and appendices. $2.*

In this study of the relationship between the University of California and the City of Berkeley, Mr. Harvey examines the problem that has often plagued city officials. Namely, whether or not sewage, water rates, and charges for municipal services should be collected from state-supported educational institutions.

Mr. Harvey rather weights his arguments against payments by the university for city services. But the condensed replies on a questionnaire survey of other municipalities, carried in the appendices, refute the reasoning. City officials with similar problems would find the study extremely enlightening.

Layout of Parking Lots

HOW TO LAY OUT A PARKING LOT—*Developed and published by Western Industries, Inc., 2742 W. 36th Place, Chicago 32, Ill. 42pp. $1.*

This publication presents diagrams, data and photographs needed to design a parking area. There are 36 groups of data ranging from lot and car dimension tables to correct methods of installing parking barriers.

The ideal lot layout provides for parking the maximum number of cars, with the stalls or aisles wide enough to make parking easy. Where the accessibility to a car is of prime importance, as in a supermarket parking lot, a ten-foot wide stall would be used. Where there is a need for parking as many cars as possible, then an eight-foot wide stall would be used. A good compromise is a nine-foot stall.

Basically the width of the parking area determines the angle of the parking stall, whether it be 45°, 60°, 90°, or some other angle. Reference to a "Parking Lot Dimensional Table" given in the book shows a 90° angle with an ideal 9-foot stall and 19-foot overall car length, requires a 24-foot aisle. Consequently, one row of cars parked at 90° requires a 43-foot width dimension. A greater number of cars can be parked on 90° than 60° using the same stall width. The length of the lot determines the number of 8', 8'6", 9', 9'6" or 10' stalls that can be recommended. Data and diagrams make it possible to decide on the appropriate angle and easily compute the capacity of your own lot.

A number of devices and systems have been perfected for parking cars with the least personnel. One of these is the Western parking gate actuated by the car, when driver uses coin, token, key

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or card. The rear wheels passing over a detector lowers the gate before the next car can enter.

For the operation of hourly rated parking lots, a ticket issuing machine may be used with a parking gate. This system requires a cashier in a booth at the exit—no attendants are needed at the entrance gate. Upon leaving, the driver presents the time-dated stamped ticket which is inserted into an exit time clock which stamps the OUT time above the IN time and calculates the charges based on the length of time the parker was in the lot. Another device is the Western "X" Barrier or car (wheel) stop. Diagrams show the position of barriers in various lots.

This book is recommended to towns and cities owning parking lots and planning to provide additional parking lots.

Two Texan Oil Cities . . . and How They Grew

A Comparison of Two Oil City Business Centers—*By Dickinson Weber. Department of Geography, University of Chicago, Chicago 37, Ill.* 1959. 239pp. $4.

This book is concerned with tracing the parallel growth and development of Odessa and Midland in western Texas under the oil boom for the purpose of comparison study.

Other Reports Received

ADMINISTRATION & GOVERNMENT

Boston, Mass—Summary of Selected Activities and Accomplishments of Various City Departments by William Arthur Reilly. Administrative Services Department, Boston, Mass. 1959. 20pp. No charge.

Grosse Pointe, Mich.—Consolidation of the Cities of Grosse Pointe, Grosse Pointe Park & Grosse Pointe Farms. Issued by the Citizens Research Council of Michigan, 810 Farewell Building, Detroit 26, Mich. 1958. 44 pp. $1.

Olivette, Mo.,—Community Design Review Ordinance; Sign Ordinance; and Swimming Pool Ordinance. Office of City Manager, 9473 Olive Street Road, St. Louis 24, Mo. 1959. 6pp., 16pp., 16pp.; 50c, 50c & $1, respectively.

Richmond, Calif.—Index to City Government Studies and General Reports on Richmond Activities and Developments. Office of City Manager, Richmond, Calif. 1959. 17pp. Limited number of copies available free.

Virginia—Salaries of Municipal Officials in Virginia Cities, Reports #414 and #415. League of Virginia Municipalities, 905 Travelers Building, Richmond 19, Va. 1959. Unpaged. $1 each.

AIR POLLUTION

New York-New Jersey—Smoke and Air Pollution. Supplemental Report by the Interstate Sanitation Commission. 10 Columbus Circle, New York 19, N. Y. 1959. 4pp. No charge.

ANNUAL REPORTS

Berkeley, Calif.—Annual Report 1957-1958, Progress & Decision. Office of City Manager, Berkeley, Calif. Unpaged, No charge.

Miami, Fla.—Annual Report to City Commission. The City Planning and Zoning Board, Miami, Fla. 16 pp. No charge.

Mount Union, Pa.—Annual Report. Office of the Borough Secretary, Mount Union, Pa. 28pp. No charge.

BUILDING CONSTRUCTION

PALATINE, ILL.—Village of Palatine, Building Code. Office Building Commissioner, 54 S. Brockway, Palatine, Ill. 1959. 39 pp. $2.50.

CIVIL DEFENSE

GENERAL—Interim Statistical Report, Executive Office of Civil and Defense Mobilization, Battle Creek, Mich. No charge.

OHIO VALLEY—Civil Defense. Ohio Valley Civil Defense Authority, 84 Shadybrook Drive, Cincinnati 16, Ohio. 31pp. No charge.

EDUCATION

CONNECTICUT— Local Public School Expenses and State Aid. Connecticut Public Expenditure Council, 21 Lewis Street, Hartford 3, Conn. 1959. 37pp. No charge.

FINANCE & TAXATION

GENERAL—State and Local Government Finances in 1957. Bureau of Census, U. S. Department of Commerce, Washington 25, D. C. 1959. 75pp. $1.

GENERAL—Tax Institute Bookshelf. Tax Institute, Inc., 457 Nassau St., Princeton, N. J. 1958. 55pp. $2.

CINCINNATI, OHIO—1959 Capital Improvement Program. Office of City Manager, Cincinnati 2, Ohio. 1959. 30 pp.

CORAL GABLES, FLA.—Statement of Financial Operations and Debt Service, Office of City Manager, Coral Gables, Fla. 8pp. No charge.

VIRGINIA—Bonded Debt of Virginia Towns. League of Virginia Municipalities, 905 Travelers Building, Richmond, 19, Va. 1959. 10 pp. 75c.

HEALTH & WELFARE

GENERAL—What's in Your Future — A Career in Health. by Herbert Yahraes. Public Affairs, 22 East 38th St., NYC. 28pp. 25c.

BOSTON, MASS.—Boston's Public Baths—a costly anachronism. Boston Municipal Research Bureau, 25 Pemberton Square, Boston 8, Mass. 1958 52pp. No charge.

CLEVELAND, OHIO—Public Welfare in Metropolitan Cleveland. Cleveland Metropolitan Services Commission. 608 The Arcade, Cleveland, Ohio. 1959. 30pp. $1.50.

MARYLAND—Maryland's Nursing Home Plan. Maryland State Planning Commission, 100 Equitable Building, Baltimore 2, Md. 1959. 30pp. Mimeo. No charge.

PLANNING, ZONING & HOUSING

GENERAL—Organization of the Subdivision Ordinance, and Pictorial Views of Urban Areas. American Society of Planning Officials, 1313 East 60th Street, Chicago 37, Ill. 1959. 26pp. and 13pp. respectively. No charge.

GENERAL—Rural Low-Income and Rural Development Programs in the South, a Mimeo report. National Planning Association, 1606 New Hampshire Avenue, N. W., Washington 9, D. C. 1959. 21pp. No charge.

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Vice-Pres., Municipal Bond Dept.

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Municipal Bond Department

Bank of America

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ST. PAUL, MINN.—A Report on Central Business District. City Planning Board, St. Paul, Minn. 1958. 102pp. $2.50.

SAN DIEGO, CALIF.—Population Trends and Projections for the San Diego Metropolitan Area. Office of Planning Commission, City of San Diego, Calif. 1959. 85pp. Mineo. $2.50.

PUBLIC SAFETY

THREE RIVERS, MICH.—1958 Annual Report of Police Department. Office of City Manager, Three Rivers, Mich. 1959. 23pp. No charge.

PUBLIC WORKS

NEW YORK, N. Y.—Department of Public Works Annual Report. Office of Commissioner of Public Works, Municipal Building, New York, N. Y. 1959. 96pp. No charge.

SEWERAGE & SANITATION

CLEVELAND, OHIO.—Sanitary Sewerage & Storm Drainage in Greater Cleveland. Cleveland Metropolitan Service Commission, 608 The Arcade, Cleveland, Ohio. 15pp. 65c.

MASSACHUSETTS—Garbage and Rubbish Disposal Practices in Massachusetts Towns over 5,000 population. Bureau of Government Research, University of Massachusetts, Amherst, Mass. 1959. Unpaged. No charge.

WINNIPEG, CANADA—Annual Report for 1958. Greater Winnipeg Sanitary District. Winnipeg 2, Manitoba. 1959. 48pp. No charge.

STREETS & HIGHWAYS

GENERAL—County Road Management Actions, and County Road Management Relations. National Association of County Engineers, 1001 Connecticut Avenue, N. W., Washington 6, D. C. 1959. Unpaged No charge.

NEW YORK, N. Y.—New York City Arterial Program, Office of Mayor, City Hall, New York, N. Y. 1959. 19pp. No charge.

URBAN RENEWAL

GENERAL—Problems of Eliminating and Preventing Urban Deterioration, Reprint, Harvard Law Review Association, Cambridge, Mass. 1959. 47pp. $1.

AKRON, OHIO—1st Annual Report. Urban Renewal Commission, 604 Municipal Building, Akron, Ohio. 1959. 22pp. No charge.

CHICAGO, ILL.—Chicago Central Area Housing Market Analysis—a Report by Chicago Central Area Committee, 111 West Washington St., Chicago 2, Ill. 1959. Unpaged. No charge.

LAPORTE, IND.—A Report on Economic Base, Existing Land Use, Population. Office of Mayor, City Hall, LaPorte, Ind. 1959. Unpaged. No charge.

WINONA, MINN.—Master Plan for Winona, Minnesota, and Environs 1959. Volumes 1 & 2. Ladislas Segoe and Associates. 811 Gwynne Building Cincinnati 2, Ohio. 1959. Unpaged. $10 each.

WATER

GENERAL—Three Water Balance Maps of Eastern North America, by C. W. Thornthwaite, John R. Mather, and Douglas B. Carter, with foreword by Edward A. Ackerman. Issued by Resources for the Future, Inc., 1145 Nineteenth Street, N. W., Washington, D. C. 1959. Unpaged. $2.

ILLINOIS—Water Resources of Illinois by Shirley Miller Bartell. State Water Survey Division, Urbana, Ill. 1959. 9pp. No charge.

KENNEBEC, ME.—Annual Report, Kennebec Water District. Kennebec Water District, Masonic Building, Waterville, Maine. 1959. 44pp. No charge.

LITTLE ROCK, ARK.—Annual Report of the Little Rock Municipal Water Works. Board of Water Works Commission, Municipal Building, Little Rock, Ark. 1959. 73pp. No charge.

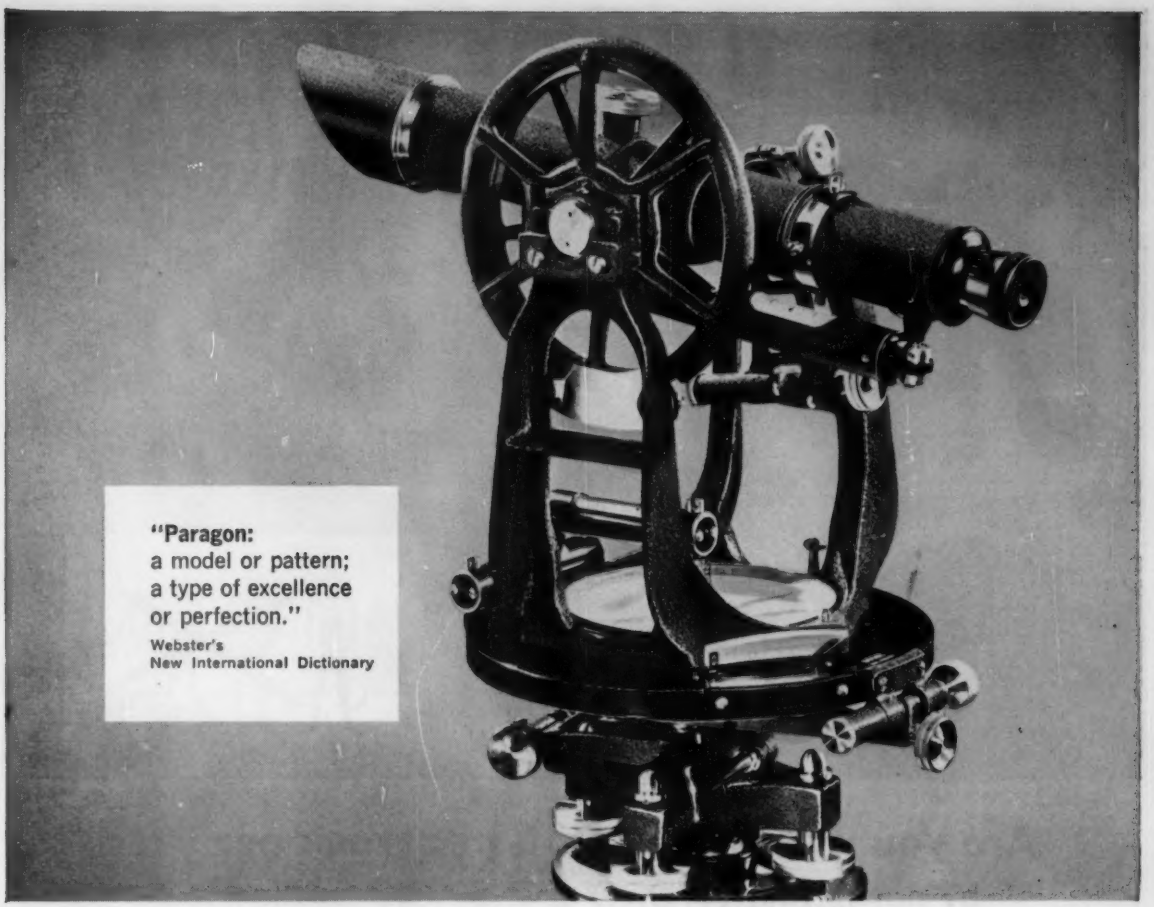
NEW ENGLAND—Tannery Wastes—Pollution Sources and Methods of Treatment—by Joseph W. Masselli, Nicholas W. Masselli, and M. Gilbert Burford. New England Interstate Water Pollution Control Commission, 73 Tremont St., Boston 8, Mass. 1959. 39pp. No charge.

REPRESENTATIVE MUNICIPAL BOND ISSUES

From May 16 to June 6, 1959

Date of Issue	*Locality*	*Amount in $1000*	*Purpose*	*Term of Yrs. to Maturity*	*Rate of Int.*	*Yield %*
5/16/59	Fairhope, Ala	200	General Obligation	10	3½	3.1
5/16/59	Hartselle, Ala.	75	Water & Sewer Revenue	2½	4½	—
5/17/59	Sheffield Lake, Ohio	72	Street Improvement	6	4¼	4.06
5/17/59	Woodstock, Ill.	175	Water Works & Sewerage Revenue	18	4½	4
5/19/59	Fallsburgh, N. Y.	89	General Improvement	10½	4.10	4.08
5/19/59	Kingston, N. Y.	492	General Purpose	5	3.10	3.06
5/21/59	Delaware, Ohio	14	Water & Sidewalk Improvement	6½	3	2.9
5/21/59	Dudley, Mass.	90	Sewer	9½	3.70	3.64
5/22/59	Circleville, Ohio	137	Sewer, Special Assessment	3½	3½	3.30
5/23/59	Corvallis, Ore	800	Water	20	3⅝	3.59
5/25/59	Folcroft, Pa.	25	General Obligation, Improvement	6½	4¾	—
5/25/59	Elkland, Pa.	20	General Obligation	3⅝	4	3.92
5/25/59	Marshfield, Mass.	66	Street & Water Mains	6¼	3½	3.47
5/26/59	Dayton, Texas	75	Water Works & Sewer Revenue	26	4¾	—
5/27/59	Zanesville, Ohio	850	Sewer	13½	4	3.90
5/28/59	Vandalia, Ill.	395	Sewerage Improvement Revenue	25	4¼	—
6/ 1/59	Gibson, Tenn.	75	Water	25	4⅝	—
6/ 1/59	Seagoville, Tex	35	Sewer System Tax	26½	4½	—
6/ 6/59	Marion, Ohio	45	Swimming Pool	5¼	3½	3.48
6/ 6/59	Princeton Co., Ohio	25	Fire Equipment	6½	3½	3.49

Compiled from THE BOND BUYER



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Naturally, because the K&E Paragon Transit is the best, it costs a little more than ordinary transits. But see for yourself how much more it has to offer. A call to your K&E representative will quickly arrange for a demonstration. Fill out and send in the coupon below.

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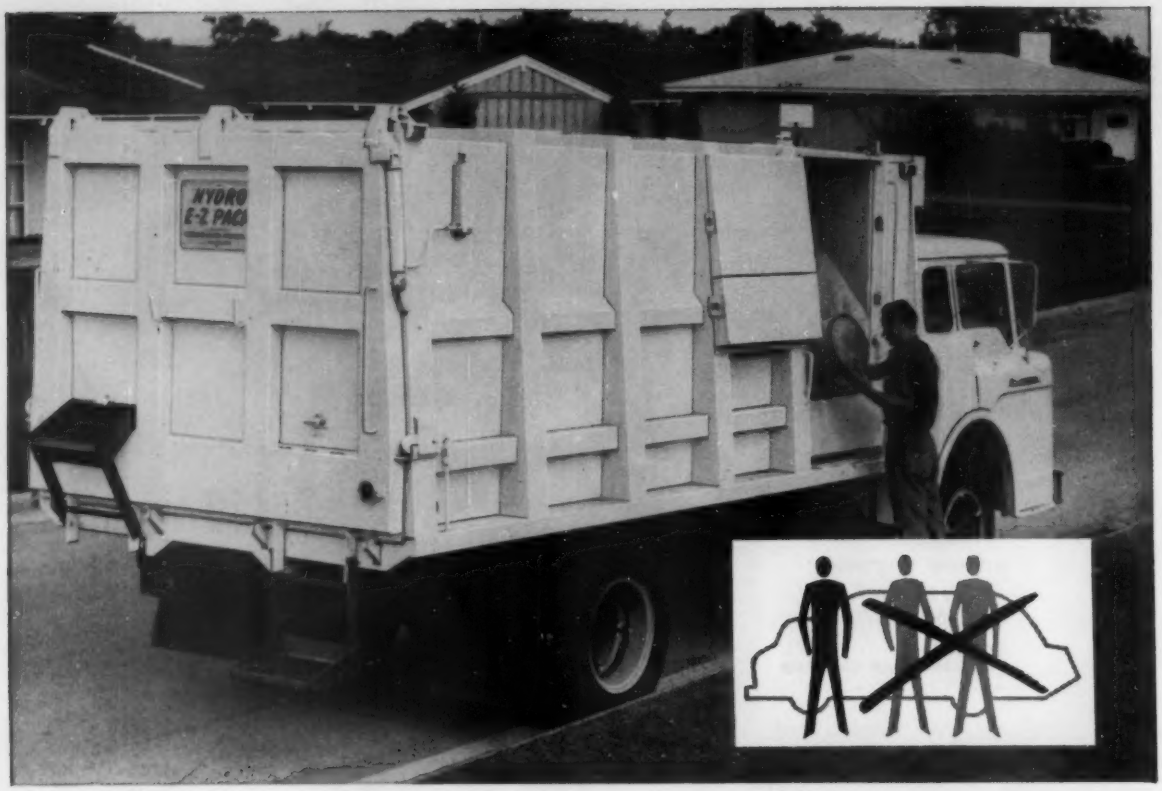


Are you wasting $8,000 per truck per year

by not having HYDRO E-Z PACK on the job?

You get one-man operation in practically every waste disposal situation with Hydro E-Z Pack disposal units. Because E-Z Pack takes everything, compacts it better, and hauls more, you cover the route faster, pack the load en route, make fewer trips to the dump. No need to break down cartons, trash and tree limbs because of E-Z Pack's wide openings.

You get other cost-cutting advantages, too. E-Z Pack requires a smaller, less expensive chassis than most units; has lower maintenance costs, is the fastest unloader in the field. Add these all together and you can be saving up to $8,000 or more per truck per year.

Are you making money on waste . . . or wasting money you could be making? Ask for a Hydro E-Z Pack demonstration on your toughest route–and analysis of your waste disposal operation. We'll send a free copy of "The Big Squeeze," too. (No obligation, of course.)

USERS' REPORTS

Here are excerpts from letters showing what Hydro E-Z Pack has done for a few users:

H.W.J., City Manager, Florida:
"We haul in one E-Z Pack load what formerly required seven large open truck loads."

C.J.M., Waste Paper Co., Ohio:
"Handles with ease what we formerly loaded in 32-foot van body. One E-Z Pack load equals four 14-foot stake body loads. In reducing bulk, has no competitor."

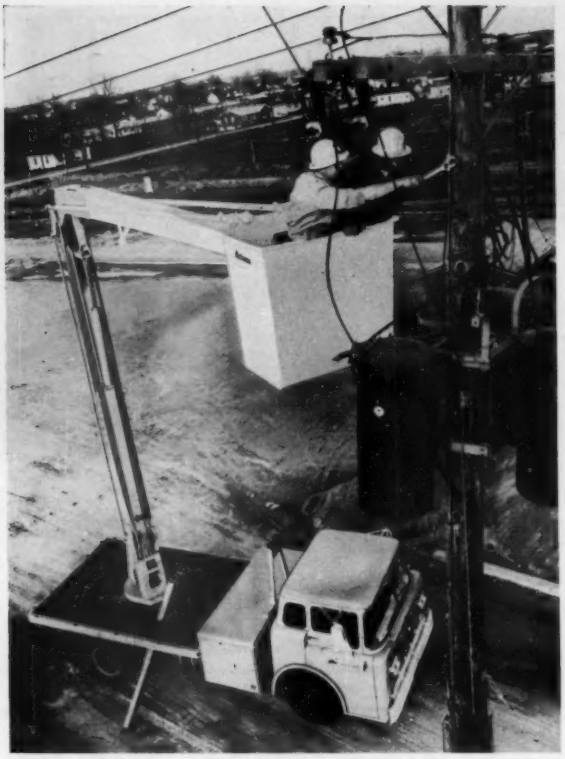
C.E.C., Disposal Co., Illinois:
"On one account for one month, we made 34 loads where we made 102 loads previously; saved on mileage, gas, oil, truck and tire wear, labor; came up with actual monthly savings of $227.20 on this one account alone. Figure one E-Z Pack replaces three other-type units."

Two-City Comparison (California)
22,000 dwelling units
9 men—9 E-Z Packs
22,000 dwelling units
42 men—2 garbage trucks,
12 rear-loader packers.

Hydro E-Z PACK

HYDRO E-Z PACK

HYDRO E-Z PACK DIVISION OF HERCULES GALION PRODUCTS, INC., DEPT. AM-759 GALION, OHIO



Fiber Glass Boom Protects Against Electrical Hazards

The Pitman aerial platform, now available with a fiber glass boom, affords maximum protection against electrical hazards to overhead maintenance crews. With the exception of bronze bushings at the point where the operator's platform attaches to the boom, all parts of the boom from the base outward are constructed of insulating materials. The boom has been tested with potentials of 230,000 volts a.c. between the operator's platform and the grounded boom base without flashover.

Two models of the boom are available: the 40 HDF for working heights up to 40 feet and the 50 HDF for working heights up to 50 feet. For complete details, write PITMAN MFG. CO., GRANDVIEW, MO., or use the Post Card on the insert following Page 52. Circle No. 860.

31 drawbar horsepower crawler tractor offers advantages of traction, stability and maneuverability

An ideal unit for a wide variety of earthmoving and material handling jobs, the 5600-pound International T-340 will handle such ground equipment as International Wagner backhoes, loaders, blades and IH dozers, the International Drott 4-in-1 skid shovel and skid grapples plus a full line of special duty equipment.

Power source for the small-sized tractor is a 4-cylinder gasoline engine with 135-cubic inch displacement that develops an estimated 45 gross engine flywheel horsepower to give a drawbar pull of 5,320 to 8,000 pounds, depending on weight and traction. (A four-cylinder diesel engine will be available later this year.)

The crawler has five speeds forward, one in reverse and speed range of 1.5 to 5.9 mph. It can be ordered with either a 38- or 48-inch gauge track, each track having four rollers and 66 inches of track-on-

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For Signs, Flashers, Flags, etc.

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Greater Stability

4 SIZES-Lightweight • Stackable

Servicised TRAFIK MARKER Highway Cones are tough, rugged, solid wall plastic units designed for long, maintenance-free service life. Available in 4 sizes—8", 14", 20" and 28" high, these bright yellow and red cones are easy to handle, have no sharp edges, and are readily stacked for storage. Sunproof, chip-proof heavy plastic material has permanent, high visibility color that will not fade, scuff, or rub off. Weighted, reinforced base provides added strength and stability. Attractively priced. Write for illustrated circular.

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DOUBLES length of Filter runs. • REQUIRES only half as much wash water. • KEEPS Filters in service over longer periods. • INCREASES Filter output with better quality effluent. • GIVES better support to synthetic resins. • PROVIDES better removal of fibrous materials, bacteria, micro-organic matter, taste, odor, etc. • IDEAL for industrial acid and alkaline solutions. • EFFECTIVE filtration from entire bed. • LESS coating, caking or balling with mud, lime, iron, or manganese.

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Representing:
ANTHRACITE EQUIPMENT CORP.
Anthracite Institute Bldg., Wilkes-Barre, Pa.

ground. Ground clearance is 12 inches; over-all height, 52 inches. When ordered with Torque Amplifier Drive, the tractor has 10 speeds forward, two in each forward gear and two in reverse.

Model T-340 is available with independent top as well as internally-mounted or engine-driven hydraulic pump hydraulic systems. It also will handle almost any trail-behind or three-point hitch equipment.

For loading operations, Model T-340 can be fitted with Harvester's Fast - Reverser attachment which permits it to change direction without shifting transmission gears. This attachment enables the operator to back away in any gear at speeds approximately 25% faster than it moves forward.

For additional information, write CONSUMER RELATIONS DEPT., INTERNATIONAL HARVESTER CO., 180 N. MICHIGAN AVE., CHICAGO 1, ILL., or use the Post Card on the insert following Page 52. Circle No. 842.

Trip Blade Snow Plow

This plow features a tripping subframe, which clears obstructions without damage to plow or truck. Its advantage over a tripping cutting edge is said to be its ability to trip even though the cutting edge is worn down.

Full oscillation permits this series of reversible and one-way trip plows to follow road contour; adjustable push plates compensate for difference in truck frame heights. Adjustment for moldboard pitch is easy.

For additional information, write WAUSAU IRON WORKS, WAUSAU, WIS., or use the Post Card on the insert following Page 52. Circle No. 865.

N. R. Gahnz, vice president sales, R. H. McMillan, vice president manufacturing, and Leonard Krueger, product engineer, of Wausau Iron Works inspect the company's latest development in trip blade snow plows.

F. Marold

O. L. Dean

S. C. Prest

New Producer of Cast Iron Pressure Pipe

The Griffin Pressure Pipe Division, newly formed unit of the Griffin Wheel Company, a manufacturer of cast iron freight car wheels for over 80 years and a subsidiary of the American Steel Foundries, will produce and sell centrifugally cast pressure pipe for transmission of water, gas and oil.

According to Goff Smith, president of Griffin, it is anticipated that production of pressure pipe by the Delavaud process will start early in 1960 at the company's Council Bluffs, Iowa foundry, and that annual plant capacity will be 40,000 tons of pipe. Until facilities are available at Council Bluffs early this summer, business will be conducted from Griffin Wheel Company general offices at 445 N. Sacramento Blvd., Chicago 12, Ill.

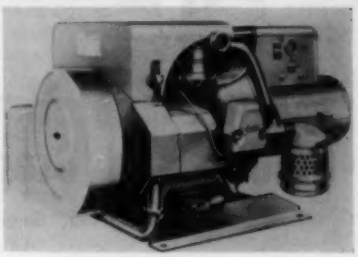
S. C. Prest, as vice president and general manager, will head the new division. Frank Marold will serve as vice president-sales and O. L. Dean will serve as manager of operations.

Air-Cooled 6KW Diesel Electric Plant

The Onan-built generating set, Model 6DRN, developed primarily for widespread general electric power applications, incorporates important design changes, the dominant one being a Vacu-Flo cooling system.

This vacuum cooling system employs a powerful centrifugal blower that *pulls* cooling air through the generator and over the heated engine parts, then *expels* the heated air through a duct to the outside. This cooling feature enables the 6DRN to be installed in completely enclosed compartments in a space just slightly larger than the unit and its accessories, with allowances for an air-intake vent and exhaust outlet.

Prime mover for Model 6DRN is a 2-cylinder, opposed 4-cycle, air-cooled, full-diesel engine, rated 13.5 to 14 hp at 1800 rpm and featuring removable cylinder barrels. Cylinders are replaceable with standard bore size (3½" bore; 3½" stroke) cylinders, making overhaul operations, when necessary, simple and comparatively inexpensive. A specially developed distributor fuel injection pump is said to provide exceptionally smooth operation of the generator set even under roughest conditions.



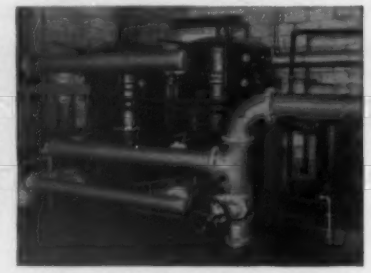
Model 6DRN, a 6 kw generating set.

Of single ball bearing, four-pole revolving armature type, the self-excited generator is directly connected to the diesel engine by a semi-flexible drive disc to assure permanent, positive alignment. The generator is rated at 6 kw AC. Single and three-phase units rated at unity power factor.

The Onan control, enclosed in a self-contained cabinet, is mounted on top of the generator. It contains a battery charge rate ammeter, oil

- BAKER PARK MUNICIPAL POOL, Frederick, Maryland, 400,000 gallons
- Filter System Design, W. R. Walter, City Engineer, Frederick, Maryland
- Filters: 2-SPF-169 R. P. Adams Company, Inc.

Shown is a typical Adams SPF Swimming Pool Filter installation. These filters are available in a wide range of sizes for pools of 50,000 to several million gallons capacity. All sizes are normally available from stock. We do not offer a filter for backyard pools.



HERE'S WHY MANY CITIES INSIST ON

ADAMS

Swimming Pool Filters

- **LOWER INSTALLATION COSTS** because it takes only a fraction of the floor space of sand filters . . . does not require massive concrete foundations.
- **TROUBLE-FREE OPERATION** . . . you never have to disassemble it for cleaning . . . as one city engineer said, "Yours is the only diatomite filter with backwashing that works".
- **PERMANENT PORO-STONE MEDIA** is inert to chemical corrosion and electrolytic action of chlorinated water. —All Adams SPF filters now in service are still equipped with the original tubes.
- **QUALITY IN EVERY PART** . . . stainless steel support rods and nuts for the tubes . . . galvanized forged steel closure plates and clips . . . *three* coats of vinyl plastic lining on sand blasted inner surfaces.

The R. P. Adams Company is the nation's largest manufacturer of filters exclusively for municipal, commercial and institutional pools.

For detailed information, write for our new technical Bulletin 626. It was prepared to help you with your swimming pool filter problems.

Our diatomite filters for municipal water supplies is discussed in Bulletin 651. Ask for it at the same time.

R. P. ADAMS CO., Inc. • 202 East Park Drive, Buffalo 17, N. Y.

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One-Piece Aluminum Guides and Stop Plates

Mean Easy Installation, Greater Economy!

No more riveted flat bar assemblies or machined grooves. Our standard design stop plates and guides and slide gates and guides cost less . . . are *non-corrosive!*

Strong, durable, non-corrosive qualities of Aluminum make it important to Water and Sewage. *Washington Aluminum Engineers are available for discussion of design problems at point of planning at no obligation.* For fabrication information on *any aluminum installation,* write for nearest representative.

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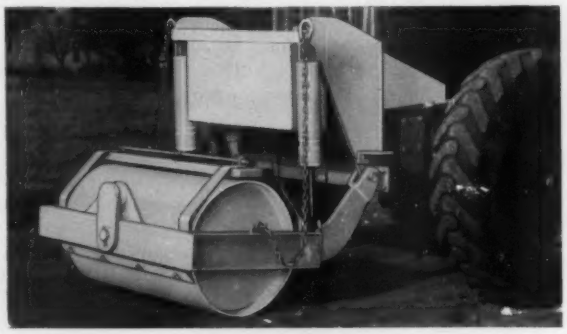

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for all types of surface rolling

SAVE TIME—quickly attached to any Cat Motor Grader. Easily, instantly lowered and raised as needed. No need for an extra machine and man . . . GraderrolleR is always on the job.

SAVE MONEY—costs much less than conventional roller. No maintenance problems. Get more use out of grader, too!

TILTABLE, TOO! Tiltable design and hydraulic accumulator allow roller to stay level while maintaning constant controlled pressure, regardless of position of grader. Automatic sprinkling system keeps asphalt from sticking to roller.

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820 ANDREWS AVE. • KEWANEE, ILLINOIS

pressure gauge, heater switch and momentary start-stop switch.

For additional information, write D. W. ONAN & SONS INC., 2515 UNIVERSITY AVE. S.E., MINNEAPOLIS 14, MINN., or use the Post Card on the insert following Page 52. Circle No. 844.

Records Chlorine Feed

The A-733 chlorine flow recorder, a new development of Wallace & Tiernan Inc., provides an accurate record of chlorine feed. In this photo it is shown mounted directly in the new A-711 W&T V-notch chlorinator, where changes in chlorine flow are rapidly and accurately recorded. For details, write Wallace & Tiernan Inc., Belleville, N. J., or use the Post Card on the insert following Page 52. Circle No. 857.

Baughman Expands

Acquisition of the former International Shoe Company plant at Jerseyville, Ill. is the latest step in the steady expansion of Baughman Manufacturing Co., producers of ice control equipment, fire-fighting pumpers, earth levelers, bulk feed bodies, self-unloading bulk material transport bodies, lime and fertilizer bodies and spreaders, filler-blowers, and self-soaking hog feeders.

According to company general manager, George O. Hofstetter, plans call for fabrication of parts and smaller products assembly in the new plant, while assembly lines for larger bodies will be maintained in the original Baughman plant.

Neptune Meter Promotes Three

Sales department advancements at Neptune Meter Co., New York, N. Y. include those of Charles W. Krause, from eastern regional sales manager to general sales manager for all the company's liquid meters, and James C. Judge, from district manager at the company's Portland, Ore. branch office to Mr. Krause's former position.

G. W. Moore, now Philadelphia district manager for the sale of Neptune meters, is replaced in his former position of sales representative for Neptune water and gas meters in upstate New York by John J. Moran, who previously represented the company in New York City and adjoining areas.

In addition to these personnel changes, Neptune has announced that the company's "Capital District," which was handled by M. J. Siebert (retired), has been incorporated into Philadelphia's District Sales territory, now covered by H. J. Siebert and Russell Rutan.

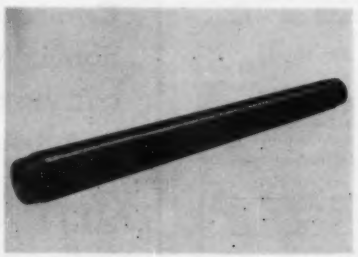
Perforated Fibre Pipe for Street and Airport Underdrain

According to the manufacturer, this pipe economically removes excess water from subgrades, reducing pavement failures. Although designed primarily for street and airport underdrain, it can be used for parking lot drainage.

High impact and crushing strength, light weight, weather and erosion resistance and chemical stability are features that assure its satisfactory performance in the field.

Permaline underdrain is available in diameters of 2, 3, 4, 5 and 6 inches; in lengths of 5, 8 and 10 feet, and in 8-inch diameters in 5-foot lengths. It can be easily connected to other types and sizes of pipe. One coupling is furnished to each standard length, providing positive joints and tube alignment.

For further information, write LINE MATERIAL INDUSTRIES, MCGRAW-EDISON CO., MILWAUKEE 1, WIS., or use the Post Card on the insert following Page 52. Circle No. 867.



Permaline perforated fibre pipe can be connected easily to other kinds and sizes of pipe.

Hydraulic Pipe Cutter

This hydraulic pipe cutter can cut pipe in a ditch, or anywhere that the chain can be wrapped around the pipe.

Cast iron water main or cement-lined cast iron water main (from 4" to 18"), standard or extra-heavy soil pipe (from 6" through 18"), terra cotta or clay tile (from 6" through 36"), transite pressure pipe (from 6" through 14")—the new Wheeler heavy-duty hydraulic pipe cutter reportedly cuts them all in less than one minute.

In actual operation, the chain is wrapped around the pipe and pulled through the jaws to the nearest ring. The adjusting screw is tightened to take up the slack and hydraulic pressure is applied by hand or electric pump. Result: a clean, accurate cut.

According to the manufacturer, neither vice nor turning are required.

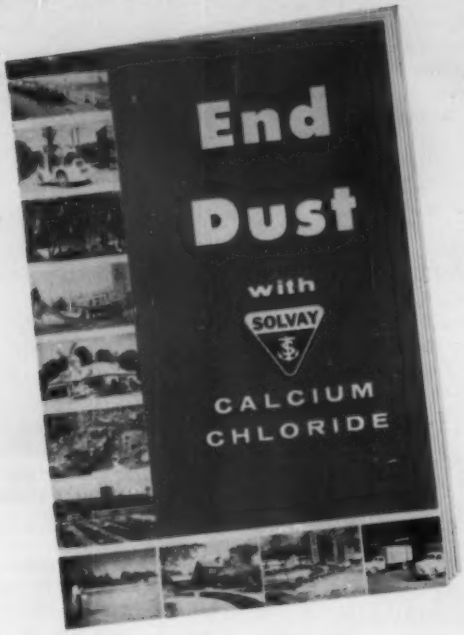
For complete information, write THE WHEELER MFG. CORP., BOX 688, ASHTABULA, OHIO, or use the Post Card on the insert following Page 52. Circle No. 871.

Hazard-Warning Sign

Flash-Glo flags, lights, flashes, reflects. It can be used effectively day or night to warn against hazards, prevent vehicular and pedestrian accidents.

This 4-in-1 unit has 2-way top-flashers plus 2-way steady flashlights, a 4-way circuit switch that permits all-on or separate lighting, and a 6-volt lantern battery. Lettering is reflectorized, legs collapsible. It is made of heavy gauge steel with red and white baked

This book
shows you how to...



...on all unpaved areas

Dustproof unpaved streets, parking fields, playgrounds, tennis courts, athletic fields. Get your copy of "End Dust" and see how easily your own men can do the job with Solvay® Calcium Chloride and simple equipment. Even the longest season needs only a few treatments. Odorless flakes of Solvay Calcium Chloride eliminate dust by keeping the surface slightly moist. Average cost is only *4¢ to 6¢* per square yard! For details of where and how to apply, and quantity needed, mail the coupon.

Allied Chemical

SOLVAY PROCESS DIVISION
61 Broadway, New York 6, N. Y.

SOLVAY branch offices and dealers are located in major centers from coast to coast.

Mail to Solvay for your copy!

Please send, at no cost, a copy of "End Dust with Solvay Calcium Chloride." 61-79

Name_____

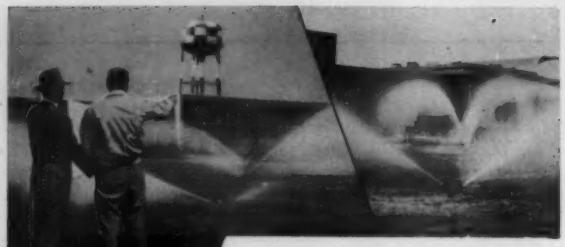
Position_____

County, town or company_____

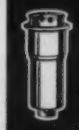
Phone_____

Address_____

City_____ Zone____ State____



NEW BUCKNER EXCLUSIVES



Adjustable GEAR DRIVEN ROTARY POP-UP SPRINKLERS

One Piece QUICK COUPLING VALVES

BUCKNER SPRINKLERS ARE YOUR BEST BUY

Buckner's research and engineering have developed new sprinklers and valves to deliver best effective water coverage pattern. Insist on genuine factory-tested Buckner irrigation equipment for extra years of service.

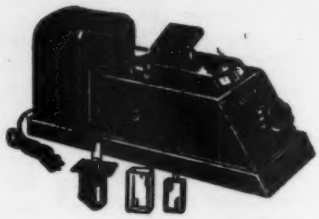
BUCKNER DEALERS SERVE YOU BETTER

You get technical irrigation planning assistance plus complete drawing board layouts for any sprinkler system. In many cases layouts are furnished free. Look in the yellow pages for your local Buckner dealer.

BUCKNER MANUFACTURING CO., INC.
P. O. Box 232 Fresno, California

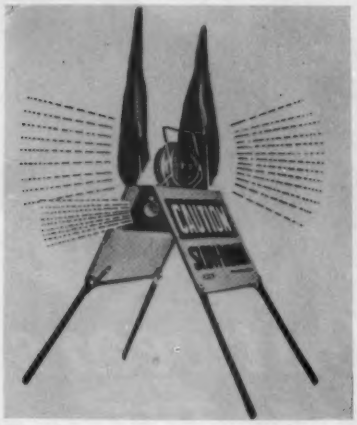
KLETT SUMMERSON
ELECTRIC PHOTOMETER

Adaptable for Use in Water Analysis



Can be used for any determination in which color or turbidity can be developed in proportion to substance to be determined.

KLETT MANUFACTURING CO.
179 East 87th Street New York, N. Y.



The DeLuxe model of Flash-Glo, a portable low-cost casualty preventive device.

enamel. Flex-shafted red flags are for daytime use; they are detachable.

Flash-Glo is available in two models with or without legs or flags. For additional information, write TEDCAR PRODUCTS CO., Box 1209, UNION, N. J., or use the Post Card on the insert following Page 52. Circle No. 847.

Plastic-Coated Valves

Plastic coating greatly improves the corrosion resistance of this cast iron DeZurik eccentric valve.

These eccentric valves, products of DeZurik Corporation, are now available with plastic coatings, which are said to make the valves particularly suitable for neutral salt solutions, alkalies, alkaline salts, mild acids, etc. In addition, they are said to provide an economical answer to iron contamination in water distillation, demineralization and de-ionization systems.

DeZurik valves work on a unique eccentric principle which pivots the plug eccentrically in the valve body to match an eccentrically-raised seat. The plug touches the valve body only when the valve is closed. Plug friction is eliminated. The resilient faced plug of these valves eliminates the need for lubrication to achieve tight shut off.

For further information, write DEZURIK CORPORATION, SARTELL, MINN., or use the Post Card on the insert following Page 52. Circle No. 856.

Services "Containerized" or Mixed Routes

A time-proved packer body, a powerful hydraulic side-loading boom and hinged-top steel containers in various sizes comprise a new, low-cost containerized refuse collection system called Contain-O-Pack.

Loading cycle is said to be simple, fast and foolproof. Containers are rolled to the Contain-O-Pack on oversized wheels. The loading boom is quickly attached by chains to the container. As the container reaches the top of the packer body and completes the lift cycle, the end door of the container is automatically opened and contents slide into the packer body.

After several containers have been dumped, the packer plate moves to the rear of the body, compressing refuse. To dump the load, rear doors are opened and the packer plate pushes out the entire mass as slowly or quickly as desired.

The 3000-pound capacity side loader with extendible boom can reach containers on loading docks, over curbing, between cars, and over fences. When servicing mixed routes, the loading boom can be folded neatly out of the way, allowing hand-loading through a 36-inch wide side door. Any standard style of truck can be used with the Contain-O-Pack. Containers are available in three sizes—1½, 2 and 3 cubic yards.

M-B's Contain-O-Pack refuse collection system is geared to the needs of municipalities, private haulers and industrial plants.

For additional information and specifications, write M-B CORP., NEW HOLSTEIN, WIS., or use the Post Card on the insert following Page 52. Circle No. 839.

Incorporates New Construction Features

The Eimco Corporation reports that its newly introduced 103 Series tractors have been engineered from the ground up, to produce an ideal 100-hp tractor unit.

"Unitized stress flow construction," said to be a new method of casting heavy steel in large sections, with castings molded to the established stresses and shapes required, has been incorporated in the design of the new Series 103. Thus the track frame and diagonal brace is cast of electric steel in one piece smoothly molded to the shape and varying thicknesses as required, to withstand normal stresses. Final drive, center housing and main frame are also produced in one heavy steel casting, without bolts or welds. (For repairs, castings can be welded as required, and according to Eimco engineers, are still readily accessible and removable.)

"Quadra - Torque," another feature, offers full hydraulic actuation on four forward and four reverse gears by the flip of a lever. This power shifting is said to be possible at any engine or tractor speed, even from forward to reverse. Independent track operation permits smooth spin turns by running one track forward and the other in reverse.

The new series will be available in four basic units, Model 103 being the tractor and dozer, with angle and straight blades, and Model 123, a front-end loader or fork lift weighing about 25,000 pounds.

The basic bare tractor weighs

One DANLINE* Outwears 15 Fibre Brooms

Here's why! . . . New, round brush wire, permanently locked in place and uniformally distributed by Danline's unique construction, produces the wearing and sweeping qualities you are looking for . . . In addition to longer life, you can remove up to 10" of sand in a single pass — even handle heavy loads of dirt, snow, gravel, etc. . . . Danline has been test-proven over countless thousands of sweeping miles by hundreds of municipalities . . . Write or call for complete, illustrated brochure, then watch your Danline and see for yourself!

*U.S. Pat. 2864112

Newark Brush Company

59-1

260 MICHIGAN AVENUE
KENILWORTH, NEW JERSEY

DESTINATION: TOMORROW!

TODAY THE E/A SHOULDER HOLIDAY DETECTOR AND THE E/P PULSE TYPE DETECTOR FOR DAMP CLIMATES ARE ANSWERING TH PIPELINER'S NEED FOR A DEPENDABLE, FULLY PORTABLE, GENERAL PURPOSE ELECTRICAL INSPECTION INSTRUMENT. BOTH MODELS CAN BE USED FOR A FULL DAY WITHOUT RECHARGING THE BATTERY. ALL WRAPPED SURFACES INCLUDING PIPE CAN BE QUICKLY AND ACCURATELY INSPECTED FOR VOIDS, PINHOLES, BREAKS, SCRATCHES AND BURNED OR COKED SPOTS

TOMORROW THESE SAME DETECTORS WILL BE USED IN THE INSPECTION OF TUBING ON OUTER SPACE ROCKETS. FOR TINKER & RASOR DETECTORS ARE DESIGNED FOR THE FUTURE.

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Electronic Detectors for every Industry

TINKER & RASOR
617 AGOSTINO ROAD, P. O. BOX 281, SAN GABRIEL CALIFORNIA

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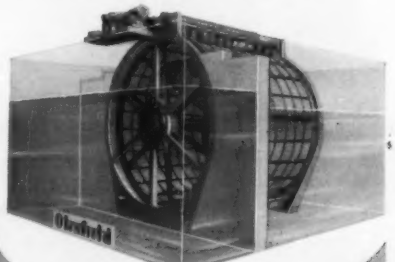
Automatic Water Filtration

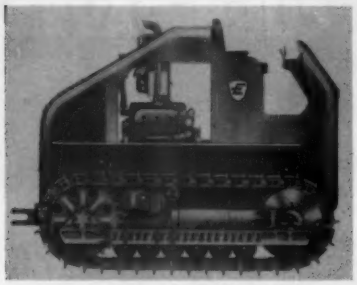
. . . the Glenfield MICROSTRAINER® is the most unique advance in water filtration. Here are some of the major advantages:

low initial cost • high filtration efficiency • automatic and continuous operation under open gravity conditions • small head loss, eliminating pumping



For information on Microstraining, come to Booth #1—AWWA Convention

GLENFIELD & KENNEDY, INC.
708 NORTH AVENUE • NEW ROCHELLE NEW YORK
NEW ROCHELLE 3-7312



Eimco's new 103 Tractor.

15,000 pounds and develops 13,500 pounds drawbar pull. According to preliminary specifications, the 103 tractor will be 11½ feet long, 7¾ feet high and 6⅓ feet wide, with a ground clearance of 17 inches. Minimum turning radius of 7½ feet indicates excellent maneuverability. On-the-job tests have shown the 103 able to climb 90% grades either forward or in reverse.

For complete information and specifications, write THE EIMCO CORP., P. O. Box 300, SALT LAKE CITY 10, UTAH, or use the Post Card on the insert following Page 52. Circle No. 840.

Bennett Mfg. Co. Enlarges Line

In acquiring the inventory, manufacturing facilities, trademarks and patent rights of the Sanitary Receiver Company, Inc. for the production of the Sani-Can line of products, Bennett Manufacturing Company, Inc. of Alden, N. Y. has taken another step toward maintaining its position as manufacturers of the most complete line of waste receptacles.

The Sani-Can line consists of Step-on Waste Cans of many sizes, styles and colors to fit institutional, hospital, household and industrial needs.

Loader-Digger Features Integrated Hydraulic System

A heavy-duty front-end loader and power digger employing a common subframe and powered from a single Sherman Hydra-Loop hydraulic system have been introduced by Sherman Products, Inc., Royal Oak, Mich. The integrated hydraulic system permits operation of digger and loader simultaneously.

The loader has a breakaway capacity at bucket lip of 5,000 pounds and full lift capacity of 2,500 pounds. With the Series 601 and 801 Ford and Fordson Dexta tractor, breakaway capacity is 4,000 pounds and lift capacity is 2,000 pounds. Bucket lifts to 10'6" and dumps at a maximum 8'9" with 7:50x16 front tires.

The digger combines rugged construction for heavy-duty digging with speed and maneuverability. It has an uninterrupted pivot arc of 188° with a reach of 18 feet at grade and 12 feet below grade. Available digging force is 19,250 pounds from a hydraulic system rated at 15 gpm at 1750 rpm, with an operating pressure of 200 pounds psi.

For additional information, write to SHERMAN PRODUCTS, INC., 3200 W. 14TH MILE RD., ROYAL OAK, MICH., or use the Post Card on the insert following Page 52. Circle No. 873.

New Way of Marking Traffic Lanes

Flex-O-Guides at work on a section of Chicago's Congress Street Expressway.

According to Bell & Gustus, Inc., specialists in traffic control work, these new guide posts have proved themselves in traffic by marking lanes, median strips, and in controlling movement of traffic on highways or parking lots.

Called Flex-O-Guides, they are made of special reinforced rubber and are said to withstand auto impact at 70 mph and to hold their shape and height even after being rolled over by trucks. Units are available in heights of 14", 20" and 26" and can be installed in only a few minutes for either permanent or "snap-in" and "snap-out" operation. They are black banded with reflective yellow and are said to prove both convenient and versatile for use wherever a change of flow or channeling of traffic is involved. For complete information, write BELL & GUSTUS, INC., 4328 N. ELSTON AVE., CHICAGO 41, ILL., or use the Post Card on the insert following Page 52. Circle No. 837.

Sherman's loader-digger.

Allis-Chalmers to Acquire Tractomotive

Allis-Chalmers Manufacturing Co., Milwaukee, Wis., recently announced plans to purchase Tractomotive Corporation, Deerfield, Ill., through an exchange of stock on the basis of 2.25 shares for each share of Tractomotive.

One of the principal product lines of the Illinois company is a rubber-tired wheel loader, the TRACTO-LOADER, which is sold through Allis-Chalmers construction machinery dealers throughout the world. These units, equipped with shovels, range in weight from 6,000 to 23,000 pounds and are in use throughout the construction, logging, mining, and pit quarry industries.

Tractomotive also manufactures front-end shovels, rippers, sidebooms for pipe-laying, and log-loading equipment for attachment to crawelr tractors. Since 1945, when Tractomotive Corp. was founded, it has been a major supplier of the equipment to Allis Calmers.

Tractomotive Corporation will become part of the Allis-Chalmers Construction Machinery Division and will complement production at the firm's Springfield, Ill. and Cedar Rapids, Ia. plants.

Batch Control Totalizer

This unit, which Sparling Meter Co. has designated Type 252, has been designed to provide accurate flow measurement wherever quantitative liquid controls are required.

It mounts on any Sparling Mainline meter. To operate, a pointer on the 14-inch dial is manually set to the desired amount. As flow passes through the meter the hand returns to zero indicating at all points the quantity still to run. Scale maximums are 10, 15, 20, 30,

MOBILE

Instant window installation for police, fire and civil defense vehicles.

PORTABLE

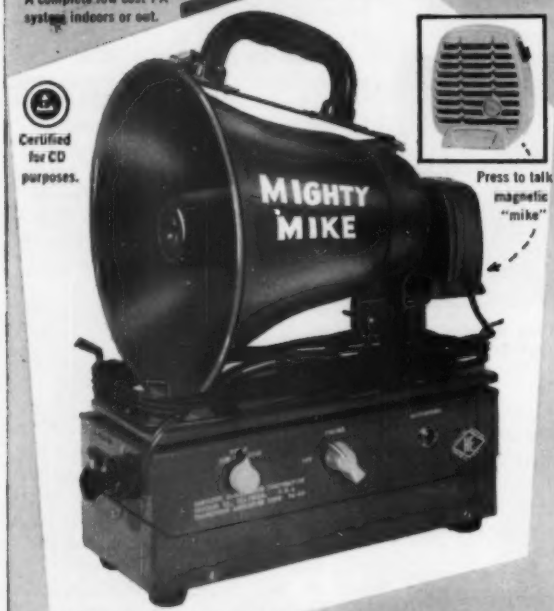
Lightweight. Carries easily. Brings all-powerful voice to any site.

PUBLIC ADDRESS

A complete low cost PA system indoors or out.

NEW 3 in 1 "mighty mike"

transistor powered VOICE AMPLIFIER



Certified for CD purposes.

Press to talk magnetic "mike"

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LIGHTWEIGHT - 30 WATTS PEAK POWER

At last! A compact 3 in 1 all-purpose voice amplifier for use everywhere. Efficient and powerful enough to be heard 1 mile away . . . MIGHTY MIKE answers the need wherever orders are to be given, instructions sent and authority maintained through the use of the human voice.

A Complete Sound System at Low Cost

The versatility of MIGHTY MIKE amazes everyone. Its small size and low cost make it a must with all departments . . . yet it packs the punch of costly sound trucks and systems. Investigate today.

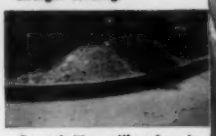
Exclusive National Distributors

B and G, Incorporated

4328 N. Elston Ave. Chicago 41, Ill.

NEW ETNYRE AUTOMATIC CURB-PAVER

Short-radius curves or long, straight curbing.



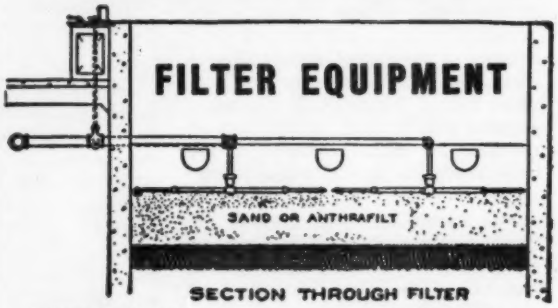
Smooth "ironed" surface is permanent, weather-proof.

Lay beautiful weatherproof bituminous curbs at speeds of four to six ft per minute without curbing forms! The new self-propelled Etnyre Heavy-Duty Automatic Curb-Paver lays, compacts, and finishes straight or curved bituminous curbs in one fast, easy trip. Compaction is over 90 per cent, equal to that of a 12- to 15-ton roll!

If you lay curbs for streets, roads, traffic islands, or parking areas, learn the full details of how the Etnyre Automatic Curb-Paver saves money, time, and trouble! Phone your nearby Etnyre dealer, or write.

E. D. ETNYRE & CO., Oregon, Illinois

PALMER



SECTION THROUGH FILTER

Filter Bed Agitator Advantages

- Requires an average of 40% less wash water
- Eliminates mud balls
- Prevents cracking and shrinking of the beds
- Produces "new" sand after short period of normal operation
- Enables you to increase filter runs up to 50%

Anthrafilt Advantages

- Doubles the length of filter runs attainable with sand and quartz media
- Requires one-half as much wash water
- Filters are out of service less because of the shorter wash cycle
- Coating, caking or balling with mud, lime, iron or manganese reduced to the minimum

Write for Circular

PALMER FILTER EQUIPMENT CO.

P. O. BOX 1655, ERIE, PA.

Sparling's new batch control totalizer Type 252 registers flows and gives accurate indication of pre-set quantities.

40, 50 or 75, with additional ciphers as required. The accumulated total is shown on a 6-digit straight reading totalizer.

A limit switch may be incorporated to activate an alarm signal or other controls upon completion of the batch. An all-metal case with locking hasp permits outdoor installation and protects the totalizer against moisture and tampering.

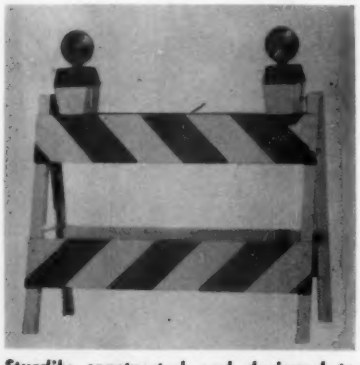
For complete information, write SPARLING METER CO., 239 N. TEMPLE CITY BLVD., EL MONTE, CALIF., or use the Post Card on the insert following Page 52. Circle No. 836.

Barricade Kits

A complete line of folding barricade kits introduced by Pacific Mercury permits damaged parts to be replaced, thus eliminating the need of replacing the entire unit when damage occurs.

Crossbars are of marine plywood, available in lengths ranging from 2 to 8 feet. Top crossbars have diagonal black stripes against a yellow bckground (white base color may be substituted at no additional cost); bottom boards are plain.

For complete information on these PM barricade kits, write PACIFIC MERCURY, 14052 BURBANK BLVD., VAN NUYS, CALIF., or use the Post Card on the insert following Page 52. Circle No. 834.



Sturdily constructed and designed to meet state highway specifications, the PM barricade can be subjected to heavy pressure without collapsing.

Opens New York Office

F. J. Smith

Yeomans Brothers Company of Melrose Park, Ill., has opened a direct factory branch sales office in New York to serve the same areas in the states of New Jersey and New York, formerly handled by Turbine Equipment Company, sales representatives of the manufacturer.

Frank J. Smith, who will be in charge of the new office, had been with Turbine Equipment for 15 years, serving as assistant sales manager of the drainage and sewage equipment division for the past two years. His experience will insure continuity in the handling of sales and service requirements for Yeomans' pumps, compressors, pneumatic ejectors, sewage treatment equipment and other products.

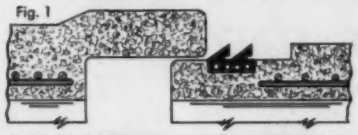
Site of the new office is 63 Vesey St., New York 7, N. Y.

Rubber Gasket for Recessed Sewer Pipe

The latest addition to the Hamilton Kent family of Tylox flexible, true compression gaskets is the "C-R" gasket. Of the "snap-on" type, it is designed for use with recessed tongue and groove or bell and spigot pipe of all sizes, and may be made of either rubber or neoprene. It can be applied to pipe at the manufacturer's plant, or by the contractor at the job site. Gaskets are properly applied on pipe and are ready for coupling when installed in the position shown in Fig. 1. The coupled pipe, and resulting water-tight, true compression seal of the gasket, are shown in Fig. 2.

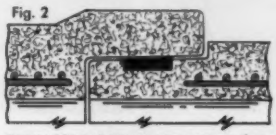
The "C-R" gasket consists of heavy base bands of rubber having integrally formed, multiple sealing

Fig. 1



TYLOX "C-R" GASKET PROPERLY POSITIONED ON CONCRETE PIPE

Fig. 2



TYLOX "C-R" GASKET UNDER FULL COMPRESSION

The wide, flat rubber "pack" formed by Tylox "C-R" Gaskets cannot be rolled or twisted out of proper position during coupling operations.

fins, and specially designed pressure pockets. As "C-R" gasketed pipe is coupled, fins and base are compacted into a solid "pack" or rubber, which seals the annular space by compression. The wide, flat design of the gasket, plus the support provided on both sides by the walls of the recess, prevent the gasket from being rolled or twisted out of proper position during pipe coupling operations.

To obtain illustrated engineering data, diagrams and installation information, write to A. J. RETO, SALES MGR., HAMILTON KENT CO., 427 W. GRANT ST., KENT, OHIO, or use the Post Card on the insert following Page 52. Circle No. 868.

Hays Celebrates 90th Anniversary

The Hays Manufacturing Co. of Erie, Pa. is one of the country's oldest and foremost manufacturers of brass and iron stops, valves, and fittings, etc. for water, gas, plumbing and manufacturing industries. Since its establishment, it has grown from a small shop with a handful of employees to an up-to-date, 235,000-square foot plant employing about 500 workers.

Hays President William H. Forster, Jr., who succeeded his late father as president in 1943, stated recently that "On the Hays Manufacturing Company's 90th Anniversary, the company observes this significant year of progress with new and expanded plant facilities, and looks to the future from a new production peak which has been built up by the firm's program of expansion over the past years."

Purchasing News

RADAR TIMER

Rabbit Ears

TRAFFIC CONTROL

Now Only $995

Controlled, Aimed and Monitored from inside of vehicle.

Changes Directions in Seconds.

THIS RADAR TIMER FEATURES:

- High Accuracy
- Lower Cost
- Adjustable Range
- Portability
- No Tool Hook Up
- Bracket or 'Spot' Mounted
- One Man Operation
- No Installation Necessary

For Demonstration or Full Information Write

MUNI-QUIP CORPORATION

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FILTER SAND AND GRAVEL

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Shipment in bulk or bagged.

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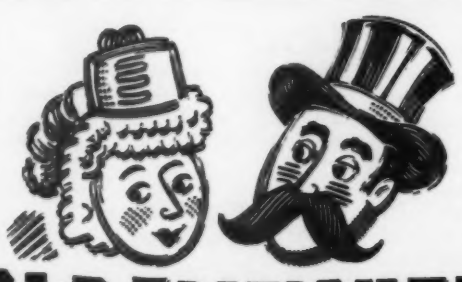
PROMPT SHIPMENT

Inquiries and orders solicited.

NORTHERN GRAVEL COMPANY

Muscatine, Iowa

P.O. Box 307 Amherst 3-2711



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NOT N.P.R.C. . . .

AMERICA's LARGEST SEWER & WATER MAIN CLEANING CONTRACTORS

NEW custom-built, mobile-mounted power equipment; company-trained, field-tested crews; experienced know-how; and NEW scientific methods completely obsolete incomplete "local" methods. RESULTS: complete pipe restoration, quickly, and at lowest costs.

For FREE Facts, Surveys & Estimates on Your Problem Call Collect, MOnroe 6-7700, Write or Wire.

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SAVES LOTS OF $

$. . . on pipe runs under streets, highways, pavement, gardens, etc.

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OPEN HOLE

AVOID TIME WASTE

Hydrauger is a modern, time-saving way to install underground pipe . . . avoids trenching, backfilling, pavement cutting, etc.

2" to 24" BITS and REAMERS

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*Earth Boring Tool

ASK FOR BOOKLET . . . NO OBLIGATION

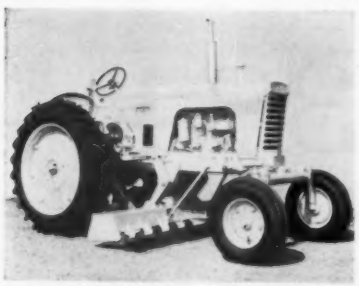
heavy pressure without collapsing.

Magnetic Sweeper

Magna-Sweep magnetic road sweeping equipment clears streets, highways and airport runways of ferrous objects. The sweeper resembles a 4-wheeled tractor to which an electro-magnet about 5 feet in length has been mounted. Power to energize the magnet is derived from a 5-kilowatt, 120-volt DC generator, driven by a power take-off from the tractor engine.

When sweeping, the speed of the tractor engine is governed so that the generator speed is maintained at 1750 rpm. This results in a vehicle speed of 5 miles an hour, at which the unit is capable of picking up and carrying away a 500-pound steel plate lying in its path.

For further information, write AIRCRAFT EQUIPMENT DIVISION, CONSOLIDATED DIESEL ELECTRIC CORP., 880 CANAL ST., STAMFORD, CONN., or use the Post Card on the insert following Page 52. Circle No. 874.



While traveling at 5 miles an hour, this magnetic road sweeper can pick up a 500-pound steel plate.

Large-Capacity Stand-by Plant

Newest in the Kohler series of heavy-duty stand-by and emergency electric plants is the Model 100R81—a 100-kw, 120/208 volt AC electric plant equipped for remote starting. Adaptable to practically all applications and voltage requirements, it features a 12 lead, reconnectible revolving field with static exciter. It is electrically cranked with an automotive type 12-volt starting battery. Voltage regulation is within plus or minus 2%, frequency regulation, 3 cycles.

Model 100R81 is recommended as a stand-by source for hospitals, schools, auditoriums, sewage treatment plants, pumping stations, airports. Its 6-cylinder engine develops 220 hp at 1800 rpm and is of heavy-duty design. Standard equipment includes vibro dampers, low oil pressure cutout and high water temperature safety device.

For additional information, write KOHLER CO., KOHLER, WIS., or you may use the Post Card on the insert following Page 52. Circle No. 875.

Highest Industrial Safety Award

General Henry Hoeffer (center), National Safety Council, presents Award of Honor plaque honoring Tractomotive Corporation, Deerfield, Ill., for an outstanding 1958 safety record in the construction machinery industry to John W. Carlson (right), the firm's president. David B. Murphy, Tractomotive's Safety Director, who was instrumental in formation of the firm's safety program, looks on. Tractomotive's record is 77% better than Construction Machinery par rates established by the Council for injury frequency and 97% better than par for injury severity.

Battery-Powered Sweeper for Congested Areas

According to its developers, G. H. Tennant Co., the Model 40-E is said to be the first walk-behind battery-powered sweeper to be developed in the United States. It is designed for use in congested areas in public buildings, hospitals, offices, plants, laboratories.

The self-propelled unit, which features a cylindrical 26-inch main brush and 17-inch rotary side brush, cleans a 34-inch path. Its reported capacity of about 25,000 square feet per hour is at top speed of 1.9 mph. Two 12-volt, 90-ampere hour batteries power the Model 40-E's 1-hp motor. The manufacturer reports that on a single battery charge the sweeper can sweep over 38,000 square feet and operate for 1½ hours. Batteries, mounted in a steel case above the dirt hopper, can be exchanged in 5 minutes.

Other features include finger-tip controls on sweeper handle; high volume vacuum system; automatic stop if handle is released; dual front-wheel drive; 2200-square inch dust filter. For additional information, write G. H. TENNANT CO., 721 N. LILAC DRIVE, MINNEAPOLIS 22, MINN., or use the Post Card on the insert following Page 52. Circle No. 876.

Tennant's battery-powered Model 40-E sweeper follows floor contours, tosses heavy dirt directly into a 2-cubic foot removable hopper, lighter dust into a 2200-square-inch filter area.

Move More Traffic

To handle today's traffic a signal system must be capable of smooth and continuous adjustment to keep step with the ever-changing demands of vehicle and pedestrian flow. For the modern idea is for the traffic to control the signals instead of the signals controlling the traffic. PR-controlled signals in a grid system or along an arterial are kept in step with traffic, moving more vehicles in less time.

A 12-page booklet describes this method of control as provided by the Electro-Matic PR System employing radar, the analog computer, electronic timing and electronic controls.

The "green" time of the various traffic

Are your mosquito sprays doing the job?

Each year more and more cities and resort areas depend on LETHANE 384 for mosquito control. When used for fogging and adulticiding applications the remarkable knockdown and kill counts obtained even on resistant varieties pleases officials, pleasure-seekers, operators and tax payers.

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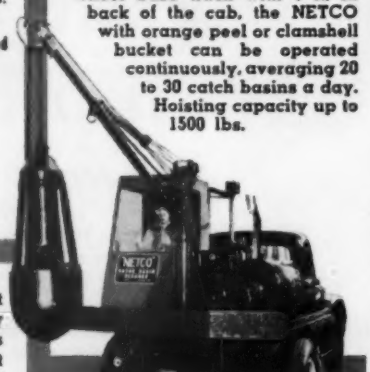
Easily mounted on any short wheel base truck with 8 ft. in back of the cab, the NETCO with orange peel or clamshell bucket can be operated continuously, averaging 20 to 30 catch basins a day. Hoisting capacity up to 1500 lbs.



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signals in a downtown grid or along an arterial is changed automatically in accordance with the demands of traffic itself. "Green" time is shortened or lengthened and its apportionment and the time relation between intersecting streets is automatically controlled. Sampling detectors transmit information about traffic volume and direction from representative locations to the PR Master which continuously analyzes the traffic pattern and directs Local Controllers to regulate their traffic signals accordingly.

Each signal-equipped intersection employs a PR Local Controller which is preset to meet the specific requirements of the individual intersection, being traffic adjusted by the PR Master to be part of an over-all system pattern. Where the additional flexibility of local actuation is required, PRA Semi Traffic-Actuated Local Controllers are used. They function within the pattern established by the PR Master, but in addition, are controlled by local demand.

The average speed of vehicles moving through the downtown area has been increased 50%, according to reports of officials of one city. Since PR was installed in another city, the official count shows that a lane which formerly handled 450 cars per hour now handles 1200.

For a copy of this booklet, *Bulletin* E-228, write to AUTOMATIC SIGNAL DIV. OF EASTERN INDUSTRIES, INC., EAST NORWALK, CONN., or use the Post Card on the insert following Page 52. Circle No. 877.

Two New Tandem Rollers

These units are now rolling off the Essick Mfg. Co.'s production line. The smaller Model 110, is a ½-1 ton tandem with ½-inch wall clearance and is designed to meet lighter weight compaction requirements of turf, soil and asphalt. It is the smallest static roller in the Essick line and features automotive-type steering wheel, two-section guide roll, dual self-adjusting scraper blades on each roll, foot-operated service and parking brake on the compaction roll. A large-capacity sprinkler tank atop the roller furnishes gravity water flow to each roll through individual valve controls and spreader bars. The Model 110 has a 5-foot turning radius.

The larger 3½-5½-ton tandem is available in two models: the 560-C with 4-cylinder Continental water-cooled engine developing 32 hp, or the 560 with Wisconsin 4-cylinder V-type, air-cooled engine developing 30 hp.

According to the manufacturer, the 560 has the largest diameter guide roll of any roller of comparable weight.

Model 110 (above), Essick's ½- to 1-ton tandem roller, is easily portable in pick-up truck or light trailers. Controls on the Model 560 (below) are grouped for easy accessibility, and the instrument panel can be closed and locked.

Maximum working weight has been increased to 11,300 pounds on the air-cooled model, and 11,500 pounds on the water cooled. Hydraulic steering along with split guide roll provide positive control, easy maneuverability. The roller features dual controls and can be operated from either side, with full visibility. Water regulation for spray bars can be made without leaving operating seat.

For complete information on both these tandem rollers, write ESSICK MANUFACTURING CO., 1950 SANTA FE AVE., LOS ANGELES 21, CALIF., or use the Post Card on the insert following Page 52. Circle No. 880.

Castings for Municipalities

The latest catalog of Neenah Foundry Co. presents 166 pages of castings, including a large variety for municipalities, highways, airports. Starting with 32 pages of manhole covers and 4 pages of manhole steps, there follow 34 pages of catch basin inlets, then gutter and airport inlets. Drainage grates of many designs follow. Building castings run the gamut from floor grids and treads to bumper guards. Included are cast iron branch connections for transite sewer pipe. The catalog closes with 16 more pages on manhole covers. For a copy of *Catalog R*, third edition, write NEENAH FOUNDRY CO., NEENAH, WIS., or use the Post Card on the insert following Page 52. Circle No. 879.

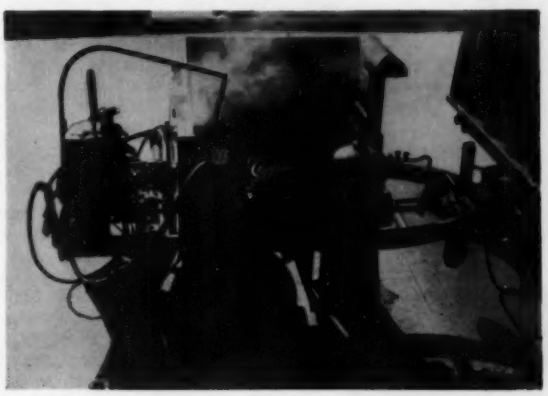
Hot Pour Joint Sealer

All equipment needed for melting and applying sealing compound are combined in this compact unit—the Clipper Model AC-40A hot pour joint sealer—which features one pass pressure sealing, direct from kettle to joint.

The AC-40A boasts a new material pump, the Moyno, which produces a smooth flow without pulsation and is said to have proven to be superior to the ordinary piston and rotary pumps when abrasive fluids such as asphalt are being extruded.

Engine and pump are at the rear of the sealer for easier operation. Thermostat, propane pressure regulator, and other sensitive instruments are grouped in a steel enclosure on the side of the sealer where they are readily accesible yet fully protected.

For additional information, write CLIPPER MFG. CO., 2800 WARWICK, SUITE 149, KANSAS CITY, MO., or use the Post Card on the insert following Page 52. Circle No. 878.



Clipper's hot pour joint sealer Model AC-40A is being heated for a day of sealing control joints in the busy streets of Washington, D. C.

ABOUT PEOPLE

Appointment of Martin B. Jaeger to to the newly created post of advertising manager for **Koehring Company,** Milwaukee 1, Wis., was recently announced by E. B. Hill, vice president - marketing. The new position carries responsibility for directing the product advertising and publicity programs for all Koehring divisions and subsidiaries.

M. B. Jaeger

Mr. Jaeger, who joined Koehring on May 1, was formerly manager of advertising and publicity for Bucyrus-Erie Company, South Milwaukee, Wis., as well as publisher of *Excavating Engineer* and *The Driller*.

E. J. Goes, publicity manager for Koehring, will continue in that position. A 46-year man at Koehring, he will be in charge of shows, conventions, exhibits, trade association activities, and other special sales promotion programs.

The election of George H. Woodland, vice president-marketing, to its board of directors has been announced by **Chain Belt Company,** Milwaukee 1, Wis.

H. H. Heltzer, reflective products division and R. H. Herzog, duplicating products division, have been elected divisional vice presidents of **Minnesota Mining & Manufacturing Co.**

Fred J. Hagy, Jr., manager of the Waterloo, Iowa branch of the **A. Y. McDonald Mfg. Co.,** Dubuque, Iowa, has been promoted to the position of merchandising manager.

William E. Carter has been named branch sales manager in the Pittsburgh area for Exide Industrial Division of **The Electric Storage Battery Co.**

The Union Metal Mfg. Co., Canton, Ohio, leading manufacturer of street and highway lighting poles, has announced the election of L. F. Heckmann to vice president in charge of sales. It has also made known the retirement of C. A. Streb and W. A. Porterfield from their respective positions of Chairman of the Board and vice president in charge of sales promotion. Both men will continue as directors of the company and will be available on a consulting basis.

Gilbert T. Bowman, assistant vice president of **Rockwell Manufacturing Company's** Motor and Valve Division, has been elected a vice president of the company and will be in charge of the International Division and Petroleum and Industrial Division. The appointment was announced by W. F. Rockwell, Jr., president.

Richard R. Kennedy and Robert M. Kennedy, partners in the Engineering Office of Clyde C. Kennedy, have announced the change of office name to **Kennedy Engineers.** The change was made to reflect the present partnership and to facilitate communications for its expanding area of practice.

The **Cooper-Bessemer Corporation,** leading builder of reciprocal and centrifugal compressors for gas transmission and gas processing, has named Earl Martin branch manager of its Houston, Texas office, located at 2705 Danville Street.

The appointments of Simon Ferber and Harry Schwartz as sales representatives in New York State for **United Metal Cabinet Corporation,** New York, N. Y., have been announced by Milton Greenberg, waste receptacle division vice president.

N. Young DuHamel, Jr. has been elected vice-president of sales and advertising for **Centriline Corporation,** a wholly-owned subsidiary of Raymond International Inc., New York, N. Y., that specializes in rehabilitating underground pipelines by cleaning and lining. Mr. DuHamel joined Centriline in 1951 as a field superintendent in charge of pipeline processing, and was transferred to the company's sales department in 1954.

N. Y. DuHamel, Jr.

H. J. Robertson, president of **Orangeburg Manufacturing Co.,** Orangeburg, N. Y., has made known the appointment of James E. McCauley as a vice president. Orangeburg Mfg. is a division of The Flintkote Company.

Thomas L. Bell, Jr. has been named general sales manager of **Photostat Corporation,** manufacturers of graphic information handling equipment and systems, according to an announcement by Kenneth M. Leghorn, company president.

In his new assignment as general manager (a newly created position) for **B-I-F Industries, Inc.,** Providence, R. I., William L. Sammons heads a highly qualified team of field and sales and service engineers located in major business centers throughout the United States and Canada, as well as four groups of process systems engineers in Providence. In addition, he directs departments concerned with repair parts and export sales.

Robert D. Butler, assistant to the sales manager of the Plug Valves Division of **W-K-M, ACF Industries, Inc.,** Missouri City, Texas, has been made sales manager of that division.

Kent J. Worthen, manager of product planning for **General Electric** point-to-point communication systems, has been appointed manager of mobile radio equipment sales for the Communication Products Department at Lynchburg, Va. General Electric mobile radio is widely used by police and fire departments and other municipal services and by the nation's defense forces.

As product education manager, Gerald R. Tennyson heads up a newly created Product Education Section that coordinates advertising and technical publication activities for **Tractomotive Corp.,** Deerfield, Ill.

H. F. Froehlich, for the past year group manager responsible for the manufacturing, engineering and purchasing-production departments at **Sherman Products, Inc.,** Royal Oak, Mich., has been elected to the post of vice president-manufacturing.

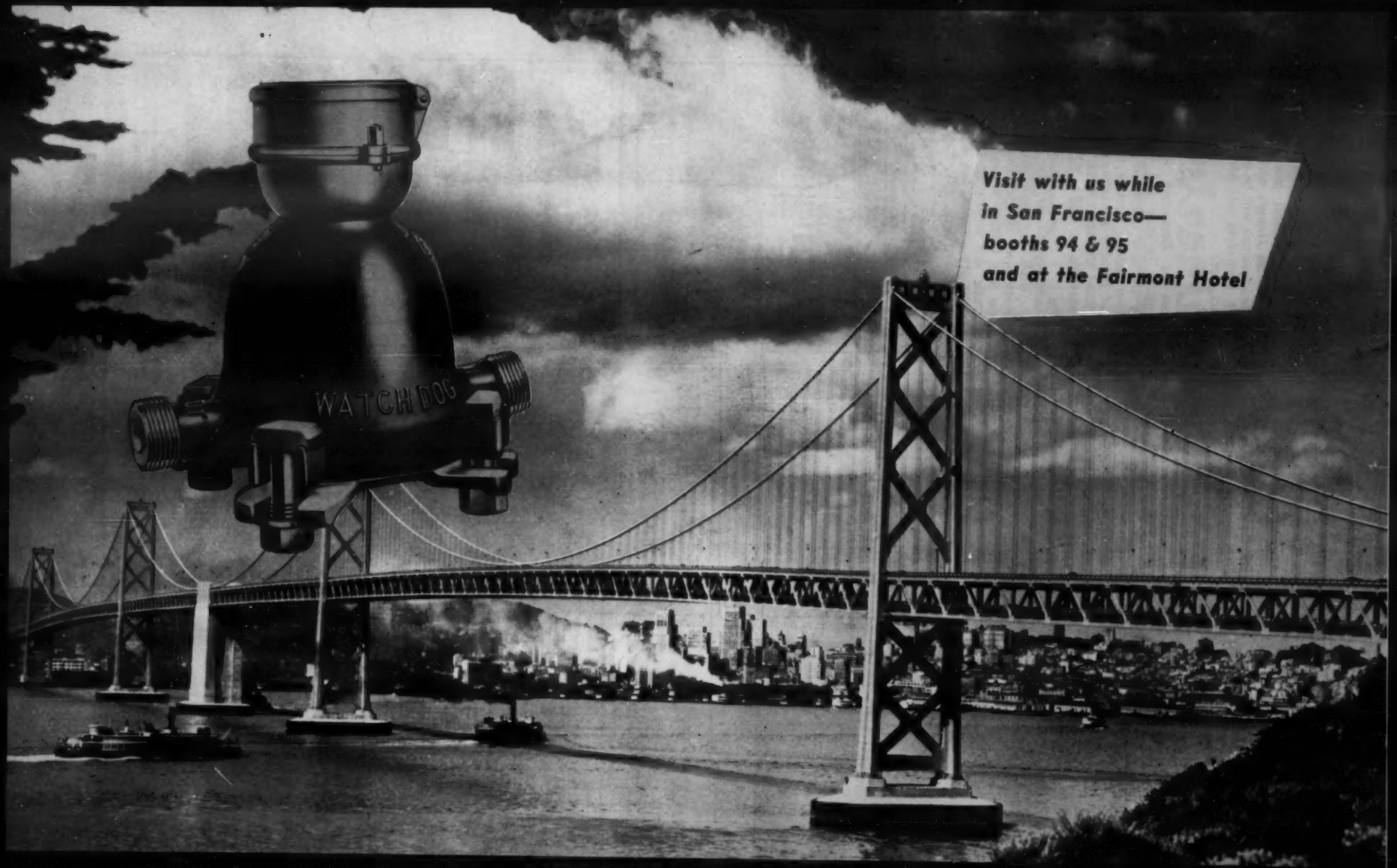
Jack W. Pratt, newly appointed eastern sales manager of the **Process Engineers, Inc. Division of Eimco Corporation,** San Mateo, Calif., will supervise all sanitary equipment sales activities in the area east of the Rocky Mountains from headquarters at the Eimco-Process Research and Development Center in Palatine, Ill.

J. W. Pratt

Ralph E. Boyd, president of **The Galion Iron Works & Mfg. Co.,** Galion, Ohio, manufacturers of road rollers and motor graders, has made known the appointment of Thomas F. Flood as executive vice president.

Frederick B. Shew, formerly sales development manager, has been appointed manager of sales, commercial cranes and excavators, by **Bucyrus-Erie Co.,** South Milwaukee, Wis. Bucyrus-Erie's commercial line includes ⅜- to 4 cubic yard excavators and cranes; also 10-through 45-ton Transit Cranes; and ⅜- and ½-yard Hydrocranes.

F. B. Shew



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About People

The Gamewell Company, Newton Upper Falls, Mass., manufacturers of fire alarm systems, police signal systems and precision electro-mechanical equipment, has appointed Robert Lassell to the position of sales manager—municipal fire alarm and signal systems, according to an announcement by G. A. Swim, executive vice president.

Changes in personnel at **Enterprise Engine & Machinery Company,** San Francisco 10, Calif., include the appointment of Austin B. Crouchley as manager of the company's New York branch and the promotion of Jack L. Roberts to the position of Los Angeles district manager following retirement of H. R. Hogaboom from that post.

E. E. Strickland, manager of industrial sales for the New York district of **Allis-Chalmers Industries Group,** is now manager of general products division sales for the Group's northeast region. His headquarters will be in New York. R. H. Porterfield fills Mr. Strickland's former post.

Sales activities for specialized applications of Remington Rand Univac computers in state and local government are now under the direction of Gordon Smith, recently named director of industry marketing for Remington Rand Univac Division, **Sperry Rand Corporation.**

Machinery Center, Inc., Salt Lake City, Utah, has been made franchise representative in the Utah, southern Idaho and western Wyoming area for the sale and service of industrial lift trucks and tractor shovels, manufactured by **Yale & Towne Mfg. Co.,** Philadelphia 15, Pa.

CLASSIFIED ADVERTISING

Advertisements in this section will be accepted at the rate of $15 per col. inch (minimum 2 inches). Send copy for ads to the Production Department, THE AMERICAN CITY, 470 Fourth Ave., New York 16, N. Y.

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1—Erie City Boiler, 396 hp, complete with valves, motors, and fans, electric switches, and relays. Fyr-Feedor Stoker. Fire box is 12 ft. high, 10 ft. wide, and 12 ft. long.

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1—Salt Tank, complete with valves. 42" high—36" diameter.

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1—Baily Steam Flow Meter. Pressure standard—800 psig, maximum capacity 35,000 lbs. per hour, complete with draft, damper controls, and gauges.

1—Fairbanks-Morse Electric Boiler Feed Pump. 1½" suction, 25 hp, 2920 rpm.

1—Dean Brothers Steam Driven Boiler Feed Pump, complete with valves, checkvalues, and lubricator, 10x6x12. Capacity—1,500 hp.

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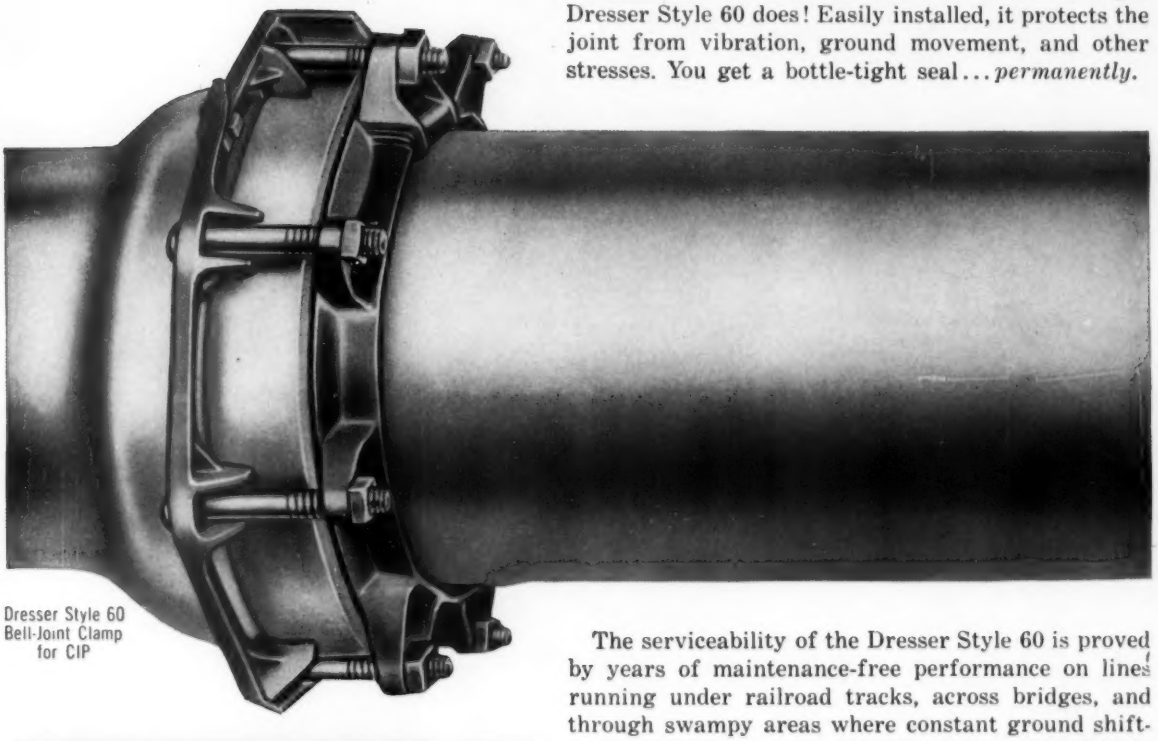

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Despite muck and silt and the 5 foot depth of the raging waters, the Michigans plowed along without pause, moving hundreds of people to higher ground. Their use, unplanned, nonetheless *proves Michigans can work successfully in deep water* no matter what the task—flood rescue, stream crossings, beach cleaning, etc, etc.

Switch from roadbuilding to diking to "ferry service"

It all started when heavy spring thaws released a torrent of water into Nimishillen Creek. The water rose—and rose—soon over-ran its banks, and poured out over a 25-block area of Canton's northeast side. Call went out to the three 1¼ and 1¾ yd Michigans. In they rushed from normal roadbuilding and material-handling chores, started building retaining walls. Soon, though, it became obvious the water was rising so rapidly dikes weren't nearly as important as saving people. Nobody thought *any vehicle* could get through, but the need was so great the Michigans were tried.

They did the job!

First, the very old and the very young, the crippled, the bed-ridden were scooped from danger and carried away in the machines' big (6′7″ and 7′1″ wide) buckets. When the infirm were safe, the Michigans ferried out load after load of healthy evacuees.

"These machines certainly saved the day for us," said Wilson J. Myers, Service Director for the City of Canton. "They plowed through the shoulder-high water like steel whales with a mouthful of Jonahs. They even put the boats to shame. The Michigans were faster and they didn't tip in the current."

In water several days, yet no repairs needed

Wilbur Schultz, Canton's vehicle maintenance superintendent, pointed out that Michigans worked round-the-clock at the flood scene with only an occasional rest —and that only for refueling.

"These rigs did a wonderful amphibious job for us and didn't require any major over-haul despite their prolonged bath," said Mr. Schultz. "They were nearly submerged for hours at a time; yet, after the flood threat ended, we only had to drain, clean out and recharge the oil in the differential housings."

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CLARK® EQUIPMENT

2495 Pipestone Road
Benton Harbor 25, Michigan

In Canada:
Canadian Clark, Ltd.
St. Thomas, Ontario